

REPORT
OF THE
COMMISSIONER of AGRICULTURE
OF THE
PROVINCE OF QUEBEC
1900



QUEBEC
CHARLES PAGEAU
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY

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PRINTING OFFICE

Quebec, 2nd February, 1901.

HONORABLE LOUIS A. JETTÉ.

Lieutenant-Governor of the Province of Quebec.

Your Honor,

I have the honor to submit the report on the operations of the Department of Agriculture for the year 1899-1900 and I deem it my duty to preface it with some remarks on certain subjects which are more likely to attract attention.

The good roads policy is developing perceptibly and the spirit of routine seems destined to give way before a better appreciated idea of progress. A great step has been taken in the direction of the improvement of roads. During the past three years about 6,000 miles of roads have been made or repaired with the road machines and there is a happy augury for future in the fact that, if nothing is yet done in some places, information is nevertheless generally asked for, which is a manifestation of the desire to have better roads.

The many prizes awarded by the jury of the Paris Exposition to fruit from the Province of Quebec are the best proof that we can devote ourselves with advantage to fruit-growing and the experimental stations established in this province show us that at present there can be no doubt of success for all who wish to take up the cultivation of fruit trees. In fact we see in the special reports that by practising a proper selection, apple, cherry and fruit trees grow well, soon become hardy and yield good crops before long.

The judges in the competition of agricultural merit have made a very detailed report of their visits and there is no doubt that farmers will derive great benefit from the practical observations it contains.

They have also made a suggestion which cannot fail to specially attract public attention.

They recommend that the law and regulations governing the agricultural merit competition be amended so that owners of farms who are not professional farmers living on the produce of their farms and labor,

may constitute a special class of competitors entitled to compete for the gold medal, without depriving competitors of the agricultural class proper of the same reward when they have earned it.

In 1899 there were 512 farmers' clubs, with 39,822 members and 68 agricultural societies with 15,799 members.

In 1900 the Province of Quebec had 530 farmers' clubs with 43,363 members and 66 agricultural societies with 16,077 members.

There has thus been an increase last year of 4021 in the number of members of these associations.

The policy of the Government regarding curing rooms for cheese factories has been warmly received by the public, for in this year, 1900, alone we have already paid out nearly \$5,000 in bonuses, and fresh applications are sent in every day. There is reason to rejoice at this, for the amounts so spent are for the benefit of all the farmers and they allow of our relying on a certain improvement in the manufacture of cheese.

We have also recently observed that if England bought large cargoes of food in Canada for her troops, it was far otherwise with regard to remounts for her artillery and cavalry. We have barely supplied three per cent to the effective she had to procure for her last war and yet her officers say that Canada is a country most suitable for rearing good horses.

It has therefore seemed to us necessary to favor this industry by giving greater latitude to the agricultural societies in the expenditure of the Government grants and as regards the repayment of the members' subscriptions in seed or chemical fertilizers. In future the agricultural societies will have the right, when they do not hold exhibitions, to spend the grants given them by the Government either in purchasing breeding stock, or in giving bonuses to the owners of such animals for keeping them, subject to the reservations contained in the departmental regulations.

The Department of Agriculture has decided to foster the raising of good sires by all means consistent with the resources at its disposal, for it

does not cost the farmer more to raise a good animal without defects and when he wishes to sell it, he can always sell it at a higher price either for army or private purposes.

The Province of Quebec could not allow the Paris Exposition to pass without taking an active part in it. We therefore sent exhibits of all the products of the soil and the prizes we obtained are the best proof not only that the selections had been carefully made, but that our products possessed in themselves a value worthy of securing the attention both of the members of the jury and of the persons who take a more especial interest in the development of our national resources.

Our butter, cheese and fodder seeds, and the barley, wheat and oats of the province of Quebec figured to advantage in this great exhibition, besides our forest trees, the specimens from our mines and the splendid specimens of game and fish that we sent across the Atlantic.

The press and above all the special newspapers did not fail to call the attention of their readers to the resources of all kinds offered by the vast territory of the province of Quebec and thus, both through the prizes we obtained and the great amount of advertising we received, we think we may safely rely upon deriving considerable benefits from our participation in the Paris Exposition. For many people the part we played in this economical tourney of civilized nations was quite a happy revelation.

On another ground, through information obtained from official sources and from the English dealers, it has been ascertained that there is a great difference between the English Cheddar and the cheese to which the same name is given in Canada.

This difference lies in the quality and in the very nature of the cheese, but a more serious fact for our farmers is that the English cheese sells at a much higher price. To meet all these disadvantages, it was therefore necessary to seek for the causes thereof and satisfy the taste of the English public.

The Commissioner of Agriculture has accordingly deemed it his duty to order a special study to be made not only with the view of ascertaining whether the province of Quebec produced a Canadian cheese of as good quality as the best cheeses of the same kind made in Ontario or elsewhere.

but also of ascertaining whether it would not be possible to make real Cheddar here and thereby enable farmers to receive the benefit of the whole or of a portion of the present difference in prices.

The reading of the report, which is the result of this inquiry, will certainly not fail to be of interest to manufacturers. They will find in it a mass of fresh information of the greatest importance, especially on Cheddar as made in England, on the influence and the nature of soil and plants, the receiving and ripening of the milk, the curdling of the caseine with rennet, the breaking of the curd, the scalding, the agglomeration and fermenting of the curd, its ripening, the results of the numerous researches and experiments made by Messrs. G. Henry and E. Bourbeau.

The whole respectfully submitted,

F. G. M. DÉCHÈNE,

Commissioner of Agriculture.

OFFICERS OF THE DEPARTMENT OF AGRICULTURE

L'Hon. F.-G. M. DECHENE, Commissioner.

Mr. G. A. GIGAULT, Assistant-Commissioner.

Mr. S. SYLVESTRE, Secretary.

Mr. A. M. F. d'ESCHAMBAULT, Accountant.

Mr. J. A. PAQUET, Assistant-Accountant.

Mr. OCT. DEMERS, Registrar.

Mr. EDOUARD FAFARD, Assistant-Registrar.

Mr. OCT. OUELLETTE, Secretary, Council of Agriculture.

Mssrs. ELZ. GAUVREAU, J. E. LECLERC, OSCAR LESSARD,
ARTHUR LARUE, Clerks.

Mr. H. NAGANT, Assistant-Editor of the *Journal d'Agriculture et
d'Horticulture*.

J. T. LAMB, F. X. BILODEAU, Messengers.

REPORT
OF THE
AGRICULTURAL SCHOOL
OF
SAINTE-ANNE DE LA POCATIERE
FOR THE YEAR 1899-1900.

TO THE HONORABLE F. G. M. DÉCHÈNE,

Commissioner of Agriculture,

Quebec.

Sir,

I have the honor to submit the report of the Agricultural School of Ste. Anne de la Pocatière for the year ended on the 30th June, 1900.

STUDENTS.

During the year, thirty-one students attended the school, which, during the forty years of its existence, has given instruction on agriculture to upwards of four hundred students. I am happy to bear testimony to the good conduct of these young people and to their earnest application to both the theory and practice of agriculture. Their present assiduity warrants the hope that they will become model farmers, which will materially help the Government in prosecuting the patriotic work it has undertaken and in popularizing intelligent husbandry.

LIST OF STUDENTS WHO ATTENDED THE COURSES DURING THE YEAR
1899-1900.

NAMES.	RESIDENCE.	DATE OF DEPARTURE.
Amédée Tessier.....	Beauport.....	22 December, 1899.
Wilfrid Boulet.....	Saint-Félicien.....	22 December, 1899.
Jules Latouche.....	Beauport.....	22 " "
Albert Taschereau.....	St-Pierre de Broughton.....	
Aimé Boutet.....	Beauport.....	
J. R. T. Thibodeau.....	Quebec.....	15 September, 1899.
Adolphe Lapointe.....	Malbaie.....	
Samuel Létourneau.....	Ste-Anne des Monts.....	
J. E. W. Lambert.....	St-Joseph de Beauce.....	
Eugène Jalbert.....	Lake Bouchette.....	
Albert Rochette.....	Quebec.....	
J.-Bte Raymond.....	Sainte-Anne de la Pocatière.....	
Odilon Desjardins.....	" " " ".....	
Léonidas Caron.....	Saint-Aubert.....	
Jean Tremblay.....	Ste-Anne du Saguenay.....	
Joseph Langelier.....	Ste-Anne de la Pocatière.....	
Arthur Michaud.....	" " " ".....	
Albert Laplante.....	Beauport.....	22 December, 1899.
Léger Vaillancourt.....	Quebec.....	
Gustave Bouchard.....	Mistassini.....	
Honoré Mercier.....	Ste-Marie de Beauce.....	22 December, 1899.
Edward O'Connor.....	Quebec.....	
Alexander Shannon.....	Grande-Rivière (Gaspé).....	
Charles Pâquet.....	Ste-Anne de la Pocatière.....	
Théodore Charest.....	Quebec.....	
Joseph Ancil.....	Montreal.....	25 June, 1900.
Alfred Lajoie.....	Saint-Pacôme.....	
Alphonse Lindsay.....	Roberval.....	
Adolphe Tessier.....	Beauport.....	
Stanislas Caron.....	L'Islet.....	8 May, 1900.
Alfred Marois.....	Saint-Romuald.....	

THEORETICAL INSTRUCTION

Elements of Agricultural Chemistry :—Matter—bodies.—Solid, liquid, gaseous bodies—Simple bodies—Compound bodies—Cohesion—Affinity—Mixture—Combination—Influences favorable to combinations—Acids—Bases—Salts—Neutral bodies.

Simple Bodies : Oxygen—Hydrogen—Nitrogen—Chloride—Carbon—Phosphorus—Sulphur—Silicon—Calcium—Potassium—Aluminium—Magnesium—Iron.

Compound Bodies : Carbonic Acid.—Sulphuric Acid.—Silicic Acid.—Nitric Acid.—Chlorhydric Acid.—Lime.—Potash.—Alumina.—Magnesia.—Ammonia.—Oxide of Iron.—Water.—Chloride of Sodium.

Atmospheric : Air.—Composition.—Physical and chemical properties.—Effect of the electric spark on oxygen.—Clouds.—Rain.—Snow.—Dew.

Plants : Principal parts of the plant. — Germination. — Nutrition. — Respiration.—Transpiration.—Whence and how plants absorb the substances of which they are composed.—Conditions of absorption.

Formation of Soils : How arable lands are formed. — Soil. — Sub-soil.—Influence of the sub-soil on the soil.—Clay soils, sandy, calcareous, humus, alluvium.—Physical properties of soils. —Nitrification.—What favours nitrification.—Improvements and fertilizers.

Drainage : Reasons for drainage.—Ditches.—Trenches.—Furrows.—Drainage.—When drainage is necessary.—Different methods of draining.—Effects of drainage.

Mellowing the Soil : Reasons.—Principal works to that end.—Ploughing.—Conditions of good ploughing. — Ordinary sub-soil and superficial ploughing.—Qualities of a good plough.—Various implements.—Harrowing.—Rolling.

Manuring : Elements to be given or restored to the soil.—Barnyard manure.—Principles to be observed in keeping and making a proper use of manure.—Litters.—Tanks for liquid manure.—Composts.

Various Manures : Guanos.—Dried and pounded bones.—Tannery refuse.—Soap-boiling refuse.—Dead animals.—Wood ashes.—Soot.—Seaweed.—Horns.—Hair.—Vegetable manures.—Nitrate of soda.—Sulphate of ammonia.—Nitrate of potash.—Muriate of potash.—Superphosphate.—Lime.—Marl.—Plaster.

Cleaning the Soil : Clearing. — Stoning. — Fallow. — Turning in the stubble.—Hoeing.—Smothering crops.—Rotation.

Seeding : Importance of proper seeding.—Preparation of seed grain.—Proper covering up of seeds.—Conditions favorable to proper germination.

Various Crops : Wheat.—Barley.—Oats.—Buckwheat.—Potatoes.—Indian corn.—Beans.—Root plants.—Tobacco.

Fodder Plants : Timothy. — Agrostis. — Rye-grass. — Brome-grass. — Orchard-grass. — Fescue. — Meadow-grass. — Lupin. — Clover. — Sainfoin. — Fox-tail grass. — Sunflowers. — Care to be given to meadows and pastures. — Hay-making. — Green fodder. — Ensilage and silos.

Raising of Cattle : Breeding. — Principles. — Improvement of breeds. — Choice of Sires. — Horses. — Horned Cattle. — Pigs. — Sheep. — Poultry.

Feeding of Cattle : Rations for maintenance ; for production -- Proportionate rations for maintenance. — Alimentary principles. — Principles of rations. — Variability of composition, of preservation and of digestibility of fodders. — Beverages.

Concentrated production : How to increase consumption. — How to facilitate digestion. — How to hasten absorption. — How to promote assimilation. — Milk production. — Meat production. — Fattening of swine. — Butter and cheese. — Ice-House. — Lessons in arithmetic. — Farm book-keeping.

Fruit-tree Culture ; Choice of plants. — Selection and preparation of the soil. — Care after planting. — Apple, plum, cherry, strawberry, raspberry, gooseberry and currant culture. — Different diseases of fruit trees and remedies to be applied.

PRACTICAL INSTRUCTION.

To learn the trade of the farmer, all the students under the direction of our farm foreman took part in the general work of the farm : ploughing, harrowing, seeding, rolling, fencing, ditching, pruning trees, carting and spreading manure, making composts, working in orchard and nursery, cultivating root-plants and tobacco, hay-making, harvesting of root-plants and other products of the farm, ensilage, care of cattle, chopping fodder, preparing food for cattle, the proper keeping of stables, threshing and cleaning grain, preparing seed-grain, carting fire-wood, repairing harness and working vehicles, butter-making.

STATEMENT OF EXPENDITURE OF THE GRANT.

The grant of two thousand five hundred dollars received by the school from the Government this year was expended as follows :

Director and assistant-director.....	\$ 450 00
Farm foreman.....	400 00
Butter-maker.....	260 00
Students' board.....	800 00
Foreman of workshop.....	50 00
Servants.....	125 00
Heating and lighting.....	75 00
Rent of buildings and land.....	180 00
Water.....	20 00
Linen, washing and repairs.....	110 00
News-papers and printing.....	30 00
	<hr/>
	\$2,500 00

FARM.

Meadows	250 arpents
Wheat.....	8½ "
Barley.....	3 "
Peas.....	2½ "
Oats	70 "
Lentils (for seed).....	4 "
Green fodder (lentils, horse-beans, Indian corn)....	10 "
Potatoes	10½ "
Kitchen garden, tobacco and various root-plants...	5 "

RESULTS OBTAINED.

Hay.....	49,300 bundles
Wheat	125 bushels
Barley	97 "
Peas.....	39 "
Oats	1,905 "
Lentils (seed)	90 "
Green Fodders.....	98 tons

Potatoes	2,060	bushels
Root plants	1,500	"
Onions	43	"
Tomatoes	18	"
Leeks	600	lbs.
Pumpkins	12,000	"
Parsley, Chervil. &c	400	"
Celery	200	"
Tobacco	50	"
Cabbage	1,800	"
Fruits	300	gallons

FARM STOCK

HORSES

A Percheron mare.—Two half-bred mares.—Ten Canadian horses.—A three year old stallion.—A three year old filly.—A yearling filly.—A yearling colt.

HORNED CATTLE

Thoroughbred Ayrshires	Cows	69	} 101
"	2 year old heifers	3	
"	1 "	16	
"	Bulls	3	
"	Yearling calves	10	} 3
Canadian cows			
Grade cows			
			109

SWINE

Thoroughbred Berkshires	Boars	2
"	Sows	8
"	Porklings	15
Chester White	Boar	1
Mixed breeds		78
		104

SHEEP

Thoroughbred Cotswolds	Rams	4
"	Ewes	12
		16

EXPERIMENTS

We are again making experiments this year in the cultivation of barley with different chemical fertilizers and barnyard manure. The soil chosen for these experiments is a sandy clay, of average richness and it bore a crop of oats last year.

We divided a certain part of the field into eight parcels or plots of 240 square feet each, and each bearing a numbered picket.

The superphosphate of lime and the chloride of potassium were applied on the 25th. May, immediately followed by a harrowing. The seeding was done on the 20th. June. The nitrate of soda and barnyard manure were applied and turned only after the last harrowing. The manures were distributed as follows :

Plot No. 1, the test plot, received no manure ; plot No. 2 received 6 lbs of superphosphate of lime and 3 lbs of nitrate of soda ; plot No. 3 ; $\frac{1}{2}$ lb of chloride of potassium and 3 lbs of nitrate of soda ; plot No. 4 ; $1\frac{1}{2}$ lb of chloride of potassium and 6 lbs of superphosphate of lime ; plot No. 5, $1\frac{1}{2}$ lb of chloride of potassium, 6 lbs of superphosphate of lime and 3 lbs of nitrate of soda ; plot No. 6 ; 300 lbs of barnyard manure ; $1\frac{1}{2}$ lbs of chloride of potassium, 6 lbs of superphosphate of lime and 3 lbs of nitrate of soda ; plot No. 7, 300 lbs of barnyard manure, $1\frac{1}{2}$ lb of chloride of potassium and 6 lbs of superphosphate of lime ; and plot No. 8 ; 300 lbs of barnyard manure.

In the fall, we shall carefully weigh the crop from each of the plots.

EXPLANATORY TABLE OF THE ABOVE EXPERIMENTS.

Without manure. Test plot.	Lbs.	1
Superphosphate of lime.	6	2
Nitrate of soda.	3	

Chloride of potassium. Nitrate of soda.	1½ 3	3
Chloride of potassium. Superphosphate of lime.	1½ 6	4
Chloride of potassium. Superphosphate of lime. Nitrate of soda.	1½ 6 3	5
Barnyard manure. Chloride of potassium. Superphosphate of lime. Nitrate of soda.	300 1½ 6 3	6
Barnyard manure. Chloride of potassium. Superphosphate of lime.	300 1½ 6	7
Barnyard manure.	300	8

OTHER CULTURAL EXPERIMENTS.

1. Cultivation of wheat with superphosphate of lime.
2. Cultivation of oats with ground bones.
3. Cultivation of oats with superphosphate.
4. Cultivation of oats with ground bones and wood ashes.

These different experiments should supply us with valuable information. All the students have followed the various cultural experiments with interest and taken an active part therein.

The exhibits sent on to your department by the Agricultural School for the Paris Universal Exhibition were prepared by the Students.

STAFF OF THE SCHOOL.

Superior—Rev. Dominique Pelletier.

Procurator—Rev. Elzéar Dionne.

Professor—Rev. Joseph Richard.

Director—A. S. Deschènes.

Assistant-Director—Mr. Edmond Levesque, ecclesiastic, deacon.

Farm foreman—Mr. Alfred Ouellet.

Butter-makers—Messrs. Omer Martin and Wilfrid Lambert.

Foreman of workshop—Mr. Thomas Raymond.

I have the honor to be,

Sir,

Your obedient servant,

A. S. DESCHÈNES, PRIEST.

COMPTON MODEL FARM, QUEBEC

HON. F. G. M. DÉCHÈNE,

Commissioner of Agriculture,

Quebec.

Sir,

I have the honor to submit my annual report for 1899-1900.

The hay crop through this section of the country was a light one last year; as far as this farm was concerned it was the best I have cut, on account of the greater part of it being seeded to timothy and clover the preceding year.

Our farmers in this, and, I am sorry to say in many other parts of the country, are too prone to leave their land in hay for too many years, the consequence is that the timothy and clover get killed out by natural grasses and the hay crop is practically nil.

The grain crop of 1899 was however very good, also the Indian corn for ensilage and the roots. Ensilage from Indian corn is being used more and more every year, and the result is that farmers have in mostly every case, where they have a silo, doubled the number of cattle on their farms.

For milk, as a rough forage, it has no equal ; it is also being used with success in feeding beef cattle, in conjunction with turnips.

The scarcity of hay, owing to the poor crop of last year, forced many of the farmers to feed straw during the winter, which made it impossible to procure the latter for bedding, of which we use a good deal here. I was obliged to resort to sawdust, which I used sparingly as an absorbent for the liquid manure. I found it very effective, but my chief objection to it is that it takes long to decompose, and is apt to produce moss. I hope the day is not far distant when we will be able to grow all the straw that we will require.

In my last report, I mentioned that I had sown some lime on a piece of mucky land ; the result has been as anticipated, it has absorbed a great deal of the vegetable matter. I have this year, on the same land, at the earnest solicitation of the agent and chemist of the Thomas Phosphate Powder Co., sown some of their phosphate and will have pleasure in reporting to you the result of same.

My accommodation for crop is so limited that I will be obliged this year to stack outside in the field, which is not only expensive, but wasteful, both for grain and hay.

In the Autumn of 1898 I sowed about 400 lbs of Thomas Phosphate Powder on 7 acres of pasture. I could see no results last year except that the cattle seemed to like the grass on those particular 7 acres. This summer I see a marked difference in the quality of the grass: it is much thicker in the bottom and moss etc., have disappeared; it does not get much opportunity to grow as the cattle seem to prefer it to any other part of the field and keep it cut down pretty short.

The creamery has done well and given satisfaction to both patrons and the purchasers of our butter, which still continues to command the highest price in the market. We have paid out to patrons some \$25,000. We have continued to run all winter, that is we separate 4 days a week.

We have endeavoured to get the patrons to bring milk every day during the winter, but so far have not been able to do so. If we could separate every day, the quality of the butter would be better and we could command a gilt edge price.

The number of pupils has been about the same, an average of 12. Some have left to go on to other farms to work for a year or so before starting for themselves.

The number of pupils learning butter-making has increased, there being four at present, who wish, as soon as they have sufficiently perfected themselves, to start as butter-makers. We have several of our old pupils managing creameries in this district with good success.

Mr. John Ewing has continued to give lectures during the year to the pupils on various subjects as has been mentioned in my quarterly report. Mr. Ewing reports that the progress made by the pupils is satisfactory and encouraging,

The conduct of the pupils has been good, and with few exceptions they are a well behaved, orderly set of young men.

We suffered a great deal from drought here last August and September. By saving the water all that was possible, we had enough for the house, but we were obliged to put in a horse power and pump for the creamery, to bring the water from a spring some 500 ft. below the creamery. Fortunately this spring did not fail us when the others from which we draw our main supply went completely dry. I do not think such a dry time has been experienced here for a great many years.

The experimental orchard and fruit station has, so far as the trees and bushes are concerned, done well, except the plums. There is something in the sub-soil of the land here which seems to be detrimental to plums; the trees will grow and flourish for a few years and then all of a sudden, without any apparent cause, die.

The strawberries have succeeded splendidly this season; we have had all and more than was required for the use of the establishment. Unfortunately the continued rain did not give the berries the flavor they would have had had the weather been bright and sunshiny.

I expect the crop of raspberries will be good, also the gooseberries and currants. There are a few apples on some of the young trees, but they are still too young to bear.

We are greatly in want of a good practical gardener, a man who thoroughly understands his business; the orchard and experimental fruit station are now assuming large proportions and require a great deal of care and labour. A gardener would be of much service in showing and demonstrating to the pupils the different ways of pruning, grafting, &c.

This farm is yielding more crops of every kind every year and live stock has also increased, so much so that I do not see my way clear to house them during the coming winter and may be obliged to dispose of some of the surplus.

I am sorry to say that the permanent pasture is anything but good; it has never been ploughed, is full of stones and decayed logs, etc, which

are covered with moss. It would not be an expensive matter to fence off a part of what is now in hay and plough 8 or 10 acres of the pasture every year and thus bring it into a good state of cultivation; but there would not be any building room to store the crop under the existing state of affairs, as we cannot lodge what we grow at present, thus demonstrating the need of a new barn.

I have had various enquiries from different parts of the country, about the cultivation of the land, crops to sow, etc. I have had much pleasure in answering the same to the best of my ability.

Our orchard and experimental fruit station has added much to the looks of the farm; the trees are beginning to have some size, and the row of silver maples planted this spring on the North and East sides looks very pretty.

Two years ago, as an experiment, I sowed some lime on a piece of pasture; I find it has been very beneficial to the grass, and has destroyed the moss.

I herewith enclose a statement of the Receipts and Disbursements of this Institution for the year ending June 1900.

Respectfully submitted,

JOHN M. LEMOYNE,

Director

Compton Model Farm, Compton, Quebec, July 27th. 1900.

1899-1900

HOUSE EXPENSES.

Groceries, milk, eggs, fruit etc.....	\$ 682 10
Butcher.....	722 81
Baker.....	73 16
Housework, washing etc.....	709 54
Furnishings, hardware etc.....	54 00
Freight, express etc.	20 30
Insurance.....	66 50
Total.....	\$ 2,328 41

 HOUSE RECEIPTS.

Board.....	\$	203 03
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CREAMERY EXPENSES.

Buttermaker.....	514 60
Assistant.....	171 00
Rebate to patrons from a distance.....	406 93
Supplies.....	407 04
Tubs, boxes.....	606 29
Fuel.....	173 74
Ice.....	42 12
Freight, express... .	101 87
Insurance.....	89 95
Total.....	\$ 2,513 54

CREAMERY RECEIPTS.

Butter Making.....	\$ 3,020 37
Prizes at Exhibitions.....	47 60
Total.....	\$ 3,067 97

 FARM EXPENSES.

J. M. LeMoyne, Principal.....	\$ 968 20
J. Ewing, Lecturer.....	404 43
Foreman.....	404 80
Teamster.....	330 00
Herdsmen.....	75 00
Hired help.....	439 94
Implements, general supplies etc..	1,956 44
Feed, bedding etc.....	700 85
Live Stock.....	98 13
Seeds, trees etc	85 57

Blacksmith.....	68 36
Tinsmith.....	102 87
Electric lighting.....	97 50
Fuel.....	102 65
Postage, telephone etc	60 98
Freight, express.....	29 12
Periodicals	27 42
Insurance.....	9 45
Total.....	<hr/> \$ 5,961 71

FARM RECEIPTS.

Annual Government Grant.....	\$ 4,500 00
Special " "	1,706 00
Cows.....	1,282 34
Pigs.....	488 87
Total.....	<hr/> \$ 7,926 71

ANNUAL REPORT OF THE AGRICULTURAL SCHOOL OF OKA

FOR 1899-1900.

TO THE HONORABLE F. G. M. DÉCHÈNE,

Commissioner of Agriculture,

Quebec.

Sir,

I have the honor to transmit the annual report of the Agricultural School of Oka for the fiscal year 1899-1900.

CHAPTER I.

STUDENTS.

Thirty-five students attended the school during the year, of whom twenty-two were still present on the 1st July, 1900.

LIST OF YOUNG MEN WHO ATTENDED AT OKA FROM THE 1ST JULY,
1899, TO 30TH JUNE, 1900.

NOTE : The letter P signifies that the student was present on the 1st July, 1900.

NAMES AND SURNAMES	RESIDENCE	DATE OF ENTRY	DATE OF LEAVING
Savard Dioscore	Montreal.....	12 September 1897....	2 Sept. 1899
Renard Henri	Angers, France	28 January 1898....	3 April 1899
Falardeau Antonio.....	Quebec	25 March 1898....	28 August 1899
Daunais Oswald.....	North-Adam, U S	30 June 1898....	5 January 1900
Houle Joseph.....	St-Jean d'Eschailions....	19 July 1898....	P
Robitaille Alphonse	Notre-Dame-des-Neiges...	30 " 1898....	13 April 1900
Wadelle Charles	Montreal.....	1 August 1898....	P
St-Germain Albert	Lachine.....	14 September 1898 ...	13 April 1900
Beauchamp Eugène.....	Ste-Rose de Lima.	9 October 1898....	13 " 1900
Charlebois Alphonse	Quebec	10 " 1898....	12 July 1899
Adam Eugène	Montreal.....	18 March 1899....	P
Coutu Moïse.....	Lavaltrie.....	23 " 1899....	28 August 1899
Larose Edgar.....	Thetford Mines.....	10 April 1899....	13 April 1900
Bonneau Ernest	St-David de Levis	9 June 1899....	P
Lavigne Gustave	Montreal.	22 " 1899....	P
Lemieux Armand	Montreal.....	22 " 1899....	P
Bonneville Albert	St-Remi	27 " 1899....	P
Rousseau Léonard.....	Thetford Mines.....	28 " 1899....	P
Rousseau Napoléon.....	" "	28 " 1899....	27 Dec. 1899
Fortier Georges.....	" "	2 August 1899....	P
Leroux Georges	Montreal	9 " 1899....	24 Dec. 1899
Prudhomme Joséph.....	"	19 " 1899....	P
Bonneau Amédée	St-David de Levis.....	1 September 1899....	P
Caseneuve Eugène	Montreal	6 " 1899....	P
Cinq-Mars Jean-Bapt.....	"	23 " 1899....	P
De Lorget Louis.....	Cambourg, France	27 " 1899....	P
Reid Hilaire.....	Ste-Philomène.....	19 November 1899....	24 March 1900
MacDonald Georges.....	Glengarry, Ont	22 January 1900....	P
Demers Adolphe.....	Chapeau 1900....	14 February 1900....	P
Demers Eugène.....	Pembroke, Ont.....	8 March 1900....	P
Neilson Georges	Deschambault.....	30 April 1900....	P
Caty Raoul	Montreal	3 May 1900....	P
Chouinard François.....	"	7 " 1900....	P
Peyrusse Leger.....	Lotbinière	16 " 1900....	P
Lespérance Benjamin.....	Montreal	28 " 1900....	P

CHAPTER II

SCHOOL.—THEORETICAL COURSE

§ 1. *School*.—As you have been kindly pleased, Sir, to double the quantity of free bursaries granted to the School, we are satisfied that the number of pupils will proportionately increase at the next entry. In view of the applications for admission already received, we even believe that we must shortly solicit a new favor from your kindness in order that we may be able to receive all the young people who desire to come here to study agriculture.

On account of these increases which we consider certain and which delight us, we have deemed advisable to sum up in the present report what the School of Oka is and what is there taught.

The establishment, which is situated on the slope of a wooded hill, looks down upon the Lake of the Two Mountains. It is a vast structure consisting of a main block of 190 feet long, flanked by two large pavillions.

It can easily accommodate 120 students and give them all the comfort offered only by the best equipped educational institutions. The class and study rooms are spacious and well aired. Large refectory.—A dormitory,—capable of easily containing 100 beds. A cabinet of agricultural chemistry. Twenty-five rooms for the use of students on special terms, when desired by parents. Two enormous hotwater furnaces warm the institution in winter and the purest spring water is supplied in abundance on all the stories. Lastly, let us add that the air of Oka is invigorating, salubrious and essentially favorable to health and strength development.

§ 2.—*Theoretical Instruction*.—The young men admitted to the school must previously know to read, write and cipher. The rudiments of education are indispensable in order that the technical instruction may be profitably followed.

The course covers three years and comprises :

-
1. The elements of botany with extended details respecting plants generally cultivated and those noxious to agriculture ;
 2. The elements of zoology embracing a complete study of the horse, the cow, the pig, the sheep and poultry ;
 3. Agriculture in all its applications ;
 - 4 Apiculture ;
 5. The dairy industry with the manufacture of butter and different kinds of cheese ;
 6. Wine and cider-making ;
 7. Agricultural book-keeping.

Most of the detailed programmes of these different courses have appeared in former annual reports (1897, 1898 and 1899.)

Each item of the programme is developed in class by the professor and the students, as the work progresses, receive an autographic summary of the subjects treated.

They learn the substance of these summaries and have to answer the questions relating thereto.

The entirety of the courses forms, in autography, three volumes of five to six hundred pages each.

CHAPTER III.

THE FARM.—PRACTICAL COURSE.

§ 1. *The Farm*.—The farm on which the young men receive practical instruction is about 1000 acres in superficies, with all the departments called for by a first-class agricultural establishment.

The area this year comprises :

290	acres of timber.
340	“ in course of clearing.
376	“ under field culture.
49	“ in vineyard, kitchen-garden, orchard and nursery.

The different crops during the year were as follows :

Wheat.....	1	acre
Oats	110	"
Indian Corn.....	20	"
Buckwheat.....	10	"
Potatoes.....	14	"
Swedish turnips.....	5	"
Marrow-kale.....	2	"
Beans.....	6	"
Onions.....	6	"
Tomatoes.....	10	"
Asparagus.....	1	"

185

In meadowThe remainder.

The orchard comprises 2,990 apple, 200 plum, 200 cherry and 147 pear trees, beside 3000 small fruit bushes : currants, gooseberries, raspberries.

The cow stables, perfectly fitted out, contain :

Cow Stables.	Jersey Breed :	Cows.	8	8
	Breton Breed :	Cows.	4	6
		Calves.....	2	
	Canadian Breed :	Bulls.	2	19
		Cows.....	12	
		Heifers	5	
	Ayrshire Breed :	Bull.....	1	9
		Heifers	8	
	Grade :	Cows	68	103
		Heifers.....	39	
		Total.....		145

The horse stables can accommodate 40 head. The stalls are spacious and loose boxes are reserved for the stallions and the mares in foal :

Horse Stables.	Percherons :	Stallion	1	}	5
		Mares	2		
		Fillies	2		
	Half bred Percherons :	Horses	8	}	10
		Colts.....	2		
	Country horses		6	}	8
	Colts.....		2		
Total.....					23

The piggery, built a few years ago on the most improved plans, is fitted up for 300 fattening animals. It now contains:

Piggery	{	Berkshire thoroughbred :	Boar.....	1	}	37	
			Sows	11			
			Shoats	25			
	{	Yorkshire	“	Boar	1	}	27
				Sows.....	8		
				Shoats	18		
	{	Chester White	“	Boar... ..	1	}	17
				Sows..	8		
				Shoats	8		
	{	Grade animals.....					129
							210

Sheep Fold.—The group of Shropshires, which form the chief element of the flock, supplies thoroughbred rams for a great part of the region.

Shropshires thoroughbred	Rams	4	}	68
“ “	Ewes	35		
“ “	Young Rams	15		
“ “	Ewe Lambs	14		
Grade animals.....	Ewes	37	}	43
“ “	Ewe Lambs	6		
Total.....				101

Poultry House.—Rebuilt three years ago according to the plan considered best by the most experienced practitioners of the day, contains :

Geese	Wild ganders	3	}	46
"	Geese	8		
"	Goslings	35		
Turkeys	Cocks	1	}	31
"	Hens	5		
"	Young turkeys	25		
Fowls—Minorca, Plymouths and Leghorns		323	}	523
" Cross-breeds		200		
Total poultry				600

The Creamery, burnt down in 1898, has been rebuilt conformably to plans approved by the Department and the Dairy Association. It is provided with the latest machinery, centrifugals, churns, workers, &c.

It turns out from 60,000 to 70,000 lbs of butter a season.

The *Cheesery* occupies a portion of the cellars under the new church, and Port Salut, gruyere and small cream cheeses are made on a very large scale.

Wine Cellar.—It contains 15,000 to 20,000 gallons of different wines and cider made on the farm itself and part of which is renewed after every vintage.

Barns.—Above the cow and horse stables extend immense barns, in which are annually stored the crops of grain and fodder harvested : 30,000 to 35,000 bundles of hay, &c.

Root Cellar.—In large cellars beneath the surface soil, cool without dampness and impervious to frost, are kept the crops of roots, potatoes, marrow-kale, required for winter-feeding.

The *Silo*, of 180,000 cubic feet, is built up against the stables. It will be filled this year with Indian corn and clover.

Manures.—The manures are piled up under cover of large porches which extend along the stable frontage and are thus sheltered from the sun and rain.

§ 2. PRACTICAL COURSE.

On entering the school, the young men, not excepting those intending to devote themselves to a specialty such as butter-making, nursery-keeping, market-gardening &c., take part for a certain time in the general farm work.

After having familiarized themselves with this work during several months, the specialists, at their own request, are attached to the particular department of their choice. Nevertheless, they still work for some time with their comrades engaged in the field work so that, when they leave, all of them: market-gardeners, butter-makers, nurserymen possess, in addition to a thorough knowledge of their own special branches, a great deal of valuable information relative to farm work in general.

The students who only aspire to become good farmers, work chiefly on the farm proper.

In the spring, they plough, spread and bury the manures, sow broadcast and with the mechanical seeder, make up the hot-beds, &c.

In the summer, they take part in the hoeing, earthing up of root-plants, potatoes and field vegetables. During the hay and grain harvests, they work the large implements, mowers, horse rakers, reapers, &c.

In the autumn, they again plough and turn in the green manures. They pull the cabbages, dig up the potatoes and other roots and store them in the cellar; they fill the silo and are exercised in drainage work.

During the winter, they are chiefly kept employed at the inside farm work, in looking after the stock, making up the rations, cutting the dry

fodder, threshing in the barn etc. They also go to chop with the monks and learn how to clear land of the forest.

In addition to this practical and general instruction, the students pass through the nursery in turn to learn grafting, the mode of sowing and planting and the care to be given to trees, etc. In the *cheesery*, they make gruyère and small cream cheeses. In the apiary, they look after the bees, collect the swarms, gather the honey. They succeed each other at work in the poultry yard, prepare the food for the fowls, raise the chickens, learn how to use the artificial incubator, etc.

Lastly, the young men who so desire, are attached for some days to the different workshops, forge, joinery, paintshop, etc, in order to be able to replace a nail in a horse-shoe, to plane a board etc.

I am with deep respect,

Sir,

Your devoted servant,

For the Rev. Father Abbot,

G. BORON,

Professor of the School.

URSULINE MONASTERY

Roberval, 4th June, 1900.

TO THE HONORABLE F. G. M. DÉCHÈNE,

Commissioner of Agriculture,

Quebec.

Sir,

I have the honor to submit the annual report of the farm work and the course of the school of house-keeping during the year 1899-1900.

The farm continues to be managed with a view to the dairy industry : we seek therefore to secure good pastures, good fodders. Indian corn for ensilage and grain for the cattle. In future, we will try to grow a little wheat in view of the establishment of an improved grist mill before long at Roberval. In the matter of vegetables, we only grow potatoes, the high price of labor preventing us from raising beets, carrots, etc., profitably. The following is the result of the year's work on about 80 acres.

5000 bundles first quality hay ;

625 bushels of grain, barley, oats, peas ;

700 bushels of good potatoes ;

30 tons of ensilage ;

Pasturage for 22 head of cattle.

We constantly strive for the improvement of the soil by the cultivation of clover and the use of barnyard manure, ashes and a little plaster.

The meadows, being largely situated on high land, are exposed to all the changes of the temperature ; we protect them with the stubble and, by not pasturing them in the fall ; we also use barnyard manure as a dressing.

The first crop of clover is cut early ; if the weather be not fine, we house it half dried and mix it with the straw of the previous year, which makes a fodder that is well relished by the cattle.

I take the liberty of adding to these notes a table giving in detail the result obtained by us through the selection of our milch cows, a selection which we will continue until we shall have secured a sufficiently high product. Our herd is made up of Canadian cows, the majority of which are registered, the bull being a thoroughbred :

NAMES	Age	Color	Date of calving	Time of milking	Quantity of milk	Percentage of fat	REMARKS
Hermione.....	12 yrs	Black	22 March	10½ mths	6611	4.3	Put out of the herd
Czarine.....	10 "	"	28 Feb.	10½ "	6204	4.2	
Régida.....	12 "	"	17 March	10 "	5117	4.4	
5th of Roberval.....	7 "	"	3 "	10 "	5742	4.2	
6th ".....	5 "	"	9 Feb.	4 "	1968	5.0	
7th ".....	6 "	"	24 June	10 "	4743	4.8	
8th ".....	5 "	Tawny	29 March	9 "	5565	5.2	
Zamara.....	3 "	Black	12 "	11½ "	6377	4.8	
Fleurette.....	2 "	Tawny	6 "	11½ "	4542	4.5	
Négrine.....	22 mths	Black	2 April	10 "	4108	4.8	
Reinette.....	6 yrs	Tawny	21 March	8½ "	5504	4.4	Canadian Ayrshire
Bijou.....	4 "	"	21 April	11 "	5780	4.0	
Belle du Lac.....	14 "	Red and wht	4 June	10 "	5334	4.2	
Total of milk. Butter					67595 3031 lbs.		

HOUSE-KEEPING SCHOOL

This department, which is the most important of our undertaking, received this year 18 pupils mostly from different parts of Lake St. John.

The urgent need of favoring a branch of education which is too often unattainable by young girls in the paternal home, is becoming daily more noticeable. The ignorance of a large number in regard to the most elementary house-keeping work occasionally astonishes us. We were therefore delighted, Sir, when we heard that you intend to open other house-keeping schools, while still favoring those already in existence.

We have already described the programme that we follow. The entire course covers three years, but we strive to give some notions with respect to each of the branches to the pupils who can only attend during one year. To follow the course, the pupils must show their good will and take advantage of the privileges placed at their disposal.

The pupils are provided with the Journal of Agriculture and Agriculture taught in 41 lessons by the Brothers of the Christian Schools. The volumes and bulletins received from the department are very useful especially for the farm.

Monthly notes, competitions and prizes at the end of the year encourage the pupils to profit by these lessons both in theory and practice.

We select as much as possible for prizes books useful to farmers.

The perfect organization of a house-keeping school requires time and like other useful undertakings. is not accomplished without difficulty. Still we see that good is being done and we hope that families, as well as society, will benefit by our labors.

I remain with deep respect,

Sir,

Your very humble servant,

SISTER ST-RAPHAEL,

Superioress.

IMPROVEMENT OF ROADS.

TO THE HONORABLE F. G. M. DÉCHÈNE,
Commissioner of Agriculture,
Sir,

I have the honor to submit you my report on the improvement of roads for the year 1899-1900.

I am,
Sir,
Your obedient servant,
J. A. CAMIRAND,
Superintendent of Provincial Roads.



HOW THE STREETS ARE CONSTRUCTED, IN THE TOWN OF GRANBY, P. Q.. ONE OF THE MOST PROGRESSIVE TOWNS OF THE EASTERN TOWNSHIPS.

The question of good roads is one in regard to which a remarkable change is coming over public opinion all over this continent. The

people are waking up and perceiving that while the great transportation lines by rail and canal are receiving the attention they deserve and are keeping pace with the progress of the age, our rural roads have been neglected and have not received the attention they deserve. Materials and labor are lacking everywhere. Why such a state of apathy should have obtained so long among those who use these roads, and who include our entire rural population, cannot be explained except by citing the old proverb : " What is every body's business is nobody's business ".

All transportation is a tax ; consequently the more the means of transportation are made easy, the more is that tax diminished. To mention one example only. A farmer, residing on a well built road, solid at all times of the year, can deliver his products at a cost of one cent a bushel, while another farmer, residing at the same distance from the city, cannot deliver them on account of the bad condition of his roads at a less cost than four or five cents a bushel. In the former case, the farmer is well remunerated for his work, while in the latter he loses his profits and is saddled with the burthen of bad roads.

Good public highways add value to real estate and further supply means of civilization and intellectual development.

COST OF TRANSPORTING PRODUCTS.

Last year, the United States Department of Agriculture, in order to procure information as to the cost of transporting products in that country, sent out 10,000 letters to all parts of the Union, asking, among other things, the following question : " What is the cost per ton of transporting merchandize and products over your roads, over a distance of one mile ? " Nearly 5,000 replies were received to this question and the average cost of transportation elicited from them was 25 cents per ton per mile of distance travelled. If we were to address the same question to the province of Quebec, the answer would be the same. It is well to remark that for the same sum of money, the same merchandize and products could be carried 50 miles by rail and 100 to 200 miles by water. We are therefore exposed to great disadvantages as compared with those who compete with

us in Europe, where the same transportation costs only seven to eight cents. And the same state of things must continue with us so long as our roads are not better made and are not more solid than they are at present. In France, the roads are so well made that it is now possible in some localities to transport merchandize and produce at a price so reduced for a distance of 200 to 300 miles that there is competition with the railways through the low prices offered by vehicles for this traffic. I might go further and state that this is not confined to France, but that in Belgium, Germany and England the same thing occurs. The improvement of our roads to a high degree of perfection as in Europe would therefore have for effect here also to bring down the transportation rates of our railways.

CAUSES OF BAD ROADS

What are the causes of bad roads? To this question, I reply: They are various.

There are in our province two systems in vogue as regards the construction and maintenance of roads, namely, the system of roads at the expense of the municipality and the system of shares or frontages. Let us examine the defects of these systems.

1. The system of roads at the expense of the municipalities.

By this system, the municipality levies on all the real estate a certain amount for the making and maintenance of the roads, but this tax is generally payable in labor. This labor must be performed under the direction of an inspector named by the municipality. The majority of these inspectors are excellent citizens, but have not the first idea of how to make a good road. Many of them could not make a good road even if they were to try. They get the work done to the best of their knowledge during their term of office. At the expiration of that term, another inspector takes their place and he in turn gets the work done according to his light, very often undoing what his predecessor did at great cost. One makes a narrow roadway; the other too wide a one. Sometimes enormous ditches are made and the earth is thrown to the side of the road, making

a dam and thus preventing the water from flowing off. Immense sods are thrown into the ruts and the road rendered impassable for vehicles. Often the road is deeper in the centre than on the sides and no attempt is made to remedy this defect.

Now, what is done by the people who come to pay their tax in labor and whose day's work is valued at \$1. ? They vie with each other to see which of them will do the least. The questions of the day are discussed on the road and when the sun grows hot, the shady places are sought. Then the men come late to begin work and the day's work, which is valued at \$1, does not yield in good results even 50 cents worth. If any one proposes to commute the labor at 50 cents in the dollar, there is a protest at once and the cry is raised that the farmer is being ruined. The farmer whose day's labor on his farm is not worth 50 cents, is certainly not worth \$1. on the roads of the province. Happily all the farmers are not like those whom I have just described. There are worthy men, who do their duty like good citizens, but who are hampered by the class just mentioned.

2. The frontage system.

Can a single mile of road made under this system be pointed out in the province which gives the slightest idea of what a good road should be ? I think not. A few acres of well made road may be indicated here and there, but right alongside there will be bits of various lengths from a few to some hundreds of yards which have not received the attention of the proprietors for years. I may say more : if work is done, there is certainly a variety that would be very interesting to study.

The result of all this is that, instead of obtaining a concentration of work towards a special object or according to a determinate plan, there is a diffusion of the work which therefore produces only bad results and the effects of which will be always the same so long as this system is not improved or wiped out. France, England and other progressive European countries formerly had this system, but they got rid of it years ago. France did so in 1764, England in 1835, and I may state that it is only since these dates that these two great countries have begun their great onward march in the direction of road improvement. Tresaguet in France

and MacAdam and Telford in England, are names which will remain forever written in letters of gold in the history of the roads of the two countries, as those of men who took a leading part in the great road improvement movements in both and who brought about the change in their systems in this respect.

COST OF ROADS

In order to ascertain the results obtained from the systems followed in this province as regards road construction, I investigated the expense incurred for the purpose during the last ten years in a county in the Eastern Townships and I also examined all the roads in that county. The total valuation of the county is \$2,200,000. The average of the road tax is 6 mills in the dollar, which yields \$13,200 a year. Well, here is a sum of \$13,200 which for a quarter of century has been scattered to the winds to get work done that had to be renewed every year, without leaving any visible traces from one to the other. This enormous sum of money was taken and distributed between 200 or 300 inspectors to get work done without plan or specification, that is to say, the money was placed in the hands of these inspectors, with the remark: "Do what you think best with it." Is this the way to do business? If a merchant said to his employees: "Here are \$100,000 worth of goods, sell them at whatever price you think proper?" How long would it be before bankruptcy stared him in the face? A very short time, indeed. I consider that the amount raised from the county in question for ten years past would have macadamized all its highways and maintained its least important roads, if matters had been managed as our individual affairs are managed.

ROADS MADE ON BUSINESS PRINCIPLES.

To succeed, roads must be built on the basis of business principles. The work must be controlled by some competent person and be carried out according to plans and specifications. To attain this end, the tax should be commuted in money and the outlay of this money should be under the control of the municipal corporation.

Why has France the best roads in the whole universe? Because road-making there is centralized and the work is directed by competent

persons. If, in France, they distributed as here the moneys voted for road-making and repairs, the results would be the same as here. We must concentrate our efforts at a given point, do the work intelligently and, above all, do permanent work, making roads and culverts that will not require the attention of the inspector every year. To-day we do and do over again the same thing every year, without looking forward to the future.

COUNTY ROADS.

Roads should be classed as follows :

1. County roads.
2. Township or parish roads.

The county roads should comprise the more important highways of the county, that is to say, those leading to the nearest railway station, to the county *chef-lieu* or to the nearest town. As these roads support all the traffic of the county, they should be under the exclusive control of the county, macadamized at its expense and the system adopted in this respect by the province would give astonishing results. In Ontario, it has been decided to grant aid to the construction of such roads. The province pays a part of it and the county the other part. The work is done by the proprietors in the county and the money in this way remains in the county. In this way also all the work is done uniformly. The latest machines are used and great expense is thus obviated. The tax has been reduced and the properties remote from the great centres are brought nearer thereto and have their value increased. The road tax is also more equitably divided, because, under the old system, the amount levied for road repairs is not as necessary in certain places as in others and is consequently lost.

2. TOWNSHIP OR PARISH ROADS

These roads should be tributaries to the great county highways. They are the roots which nourish the trees. They are of great importance

and their construction, though not calling for the same expense as the great county arteries, still requires much attention and intelligent manipulation. According to their importance, these roads should have a width of 18 or 24 feet between the ditches. These roads should continue under the exclusive control of the municipality, which should concentrate its efforts upon them. In certain parts of the Eastern Townships there are such roads, which are the object of admiration of all travellers.

A FEW REMARKS ON ROAD-BUILDING

It is needless to go into the building of roads at length, because, in a former bulletin, all the details necessary were given; but I may be permitted to here give the essential conditions of a good road.

1. A good road has two distinctive features:

A. A perfectly drained foundation or bed;

B. A level, hard and water-proof surface.

2. The foundation is the subsoil as it occurs in our clay roads. It should be kept dry by drainage.

3. The covering or surface of the road is generally of gravel or broken stone placed on the road in such a way that the whole shall not be churned up with the earth by the action of waggon wheels.

To attain this end, the following conditions are needful:

A. The gravel or broken stone must hold no clay or sand;

B. The roadway must have a slope of an inch to the foot and be rounded off to allow the water to flow off;

C. No ruts should be allowed to exist, as they prevent the water from running into the drains;

D. The drains or ditches should have a sufficient slope to allow the water to flow off quickly;

E. Under-drainage must be established in the spots which are naturally damp.

5. Do not leave the gravel or the broken stone where it has been emptied from the cart, but spread it immediately, in order that the traffic may consolidate it before the rains.

6. Keep the wheel tracks always filled up with it until consolidated.

7. Round off the road bed before putting on the gravel or broken stone.

8. Do the preparatory work with the grader and remove the sides of the ditches in order to allow the water to run off.

9. A width of eight feet in gravel or broken stone is sufficient in the country, but, if there be a good deal of traffic, there should be at least sixteen feet.

10. In the case of clay roads, do the work with the machine, before the earth has had time to harden under the sun.

11. After being made by the machine, clay roads should be well rolled in order to harden the surface.

MACHINES, IMPLEMENTS, &C.

As regards the making of good roads, the importance of securing the necessary machines and implements has been demonstrated in our province since the Government has aided the distribution of stone-breakers and road machines. With these machines, the labor is lessened by 50 per cent, without counting that the roads are very much better made. It is, therefore, of the utmost importance for all municipalities desiring to improve their roads, to procure without delay the latest machines for road-making. I estimate that a road machine can do the work of 75 men in a day, which is an extraordinary saving.

CULVERTS.

Wherever it is possible to do so, the culverts should be made either of stone, tiles or cement. The work should be done with a view to permanency, so that it may not need constant attention as at present. In making these culverts, the slope should be sufficient to allow the water to flow off quickly, otherwise the frost may destroy the conduits.

CONCLUSION

In my tours through the province, I notice a great change taking place in the direction of the improvement of the roads. Although in certain localities nothing has been done yet, I venture to say that, in the last three years, over 5000 to 7000 miles of road have been made or repaired with machines. Information is applied for from all sides, which proves that our fellow countrymen are aroused and now desire to have good roads. Wherever I have given lectures, a change in our municipal system as regards the roads is looked for; some municipalities have already adopted the system of paying the tax in money and others have abolished the system of shares and frontages, progress in our public highways seeming to be well started in the road to success.

J. A. CAMIRAND,

Superintendent of Provincial Roads.

AGRICULTURAL SOCIETIES AND FARMERS' CLUBS IN THE PROVINCE OF QUEBEC, 1900.

ARGENTEUIL

SOCIETIES—CLUBS	PRESIDENTS	POST OFFICE ADDRESS	SECRETARIES	POST OFFICE ADDRESS
Agricultural Society.....	Robert Watson ..	Geneva	G. J. Walker	Lachute.
Farmers' Clubs				
Municipalities of				
Arundel	Revd At. Gesbron.....	Huberdeau.....	F. Brosseau	Huberdeau..
Howard	Victor Bergeron	St-Adolphe.....	Gédéon Outinet	St-Adolphe.

ARTHABASKA

Agricultural Society.....	Jos. D. Morin	D'Auteuil	Louis Lavergne	Arthabaskaville.
Farmers Clubs				
Municipalities of				
Chénier	Jos. Cantin.....	St-Patrick's Hill ..	F. V. Lessard.....	St-Patrick's Hill.
Chester East.....	Naz. Corriveau	Ste-Hélène de Chester.....	Olivide Désilets.....	Ste-Hélène de Chester.
Chester West.....	Edmond Poisson	St-Paul de Chester.....	Alf. Lafontaine	St-Paul de Chester.
Tingwick	J. Q. Adams.....	Castlebar	G. E. Adams	Castlebar.
Warwick	R. Beaumier.....	Warwick.....	Rémi Hamel	Warwick.
Parishes of				
N.-D. St-Rosaire.....	Alf. Pratte	St-Rosaire	Rev. J. O. Melançon.....	St-Rosaire.
St-Albert de Warwick.....	Almé Laliberté.....	St-Albert	Albert Lainesse.....	St-Albert.
St-Christophe d'Arthabaska..	Henri Pépin	Arthabaskaville.....	Adélaïde Picher.....	Arthabaskaville.

Ste-Clotilde de Horton.....	Rev. Edm. P. de Courval.....	Ste-Clotilde.....	Léon Gélinas.....	Ste-Clotilde.
St-Elizabeth de Warwick....	Rev. P. G. Béliveau.....	D'Auteuil.....	J. D. Morin.....	D'Auteuil.
St-Eusèbe de Stanfold.....	Ludger Poisson.....	Stanford.....	Azade Pellerin... ..	Stanford.
St-Louis de Stanfold.....	Nap. Parent.....	Blanford.....	Alph. Provaneher.....	Arthabaska East.
St-Norbert d'Arthabaska.....	John Turcotte.....	Arthabaska East.....	Pierre Ouellet.....	Norbert Ouellet.....
St-Rémi de Tingwick.....	Alph. Saucier.....	St-Rémi de Tingwick.....	Joseph Trudel.....	St-Rémi de Bulstrode.
St-Valère de Bulstrode.....	Dolphis Vigneault.....	St-Valère de Bulstrode... ..	Aug. Bourbeau.....	St-Valère de Bulstrode.
Ste-Victoire d'Arthabaska....	Antoine Garant.....	Victoriaville.....		Victoriaville

BAGOT

Agricultural Society.....	Félix Dandenault.....	St-Simon.....	P. S. Bearegard.....	St-Liboire.
Farmers' Clubs.				
Parishes of				
St-Christine.....	Eugène Jodoin.....	St-Christine.....	J. P. Morin.....	St-Christine.
St-Dominique.....	Nichol Archambault.....	St-Dominique.....	L. J. Dubois.....	St-Dominique.
St-Ephrem d'Upton.....	Cyrille Gardin.....	St-Ephrem d'Upton.....	Pierre Falar.....	St-Ephrem d'Upton.
St-Hélène.....	Joseph Massé.....	St-Hélène de Bagot.....	Joseph Benoit.....	St-Hélène de Bagot.
St-Hugues.....	F. X. Belchemeur.....	Cavignac.....	Adélaïde Laperte.....	St-Hugues.
St-Jacques d'Acton.....	Rev. A. V. Roy.....	St-Nazaire.....	Emmanuel Girard.....	St-Nazaire.
St-Pie.....	Mathias Gauthier.....	St-Pie.....	J. B. S. Bathalon.....	St-Pie.
St-Rosalie.....	Chs. Tanguay, Elg.....	St-Rosalie.....	Alfred Dufresne.....	St-Rosalie.
St-Simon.....	Joseph Pelletier.....	St-Simon.....	Rev. F. Pratte.....	St-Simon.
St-Théodore d'Acton.....	Téles. Picard.....	St-Théodore d'Acton.....	Rémi Gauthier.....	St-Théodore d'Acton.

BEAUCE

Agricultural Society, Division A.	Rémi Bolduc.....	St-François.....	Wm. Leclair.....	St-Joseph.
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AGRICULTURAL SOCIETIES AND FARMERS' CLUBS IN THE PROVINCE OF QUEBEC, 1900.—Continued

BEAUCE.—Continued.

SOCIETIES—CLUBS	PRESIDENTS	POST OFFICE ADDRESS	SECRETARIES	POST OFFICE ADDRESS
Farmers' Clubs.				
Municipalities of				
Broughton.....	Rev. J. O. D. Naud.....	East Broughton.....	Vital Jacques.....	East Broughton.
United townships of Ditchfield and Spaulding.....	Col. G. d'Orsonnens.....	Agnès.....	H. d'Orsonnens.....	Agnès.
St-Côme de Kennebec.....	Etienne Cartier.....	Linère.....	J. E. Létourneau.....	Linère.
St-Joseph de la Nouvelle Beauce.....	Thos. Doyon.....	St-Joseph.....	Ferd. Blanchet.....	St-Joseph.
Parishes of				
Ste-Marie de la Nouvelle Beauce.....	Clovis Mercier.....	La Beauce.....	Rev. J. E. Feuilhault.....	La Beauce.
St-François.....	Gélestin Quirion.....	St-François de Beauce.....	Nap. Mathieu.....	St-François de Beauce.
St-George.....	Joseph Veilleux.....	St-Georges de Beauce.....	Joseph Gilbert.....	St-George East.
St-Evariste de Forsyth.....	Jos. Lachance.....	St-Evariste de Forsyth.....	Jos. Boutin.....	St-Evariste de Forsyth.
St-Frédéric.....	Rev. J. E. Martin.....	St-Frédéric.....	Noël Roy.....	St-Frédéric.
St-Elzéar de Linère.....	Revd. Chs. Leclerc.....	St-Elzéar.....	J. P. Guay.....	St-Elzéar
St-Augustin de Woburn.....	Alb. Dubrulte.....	Channay.....	Rev. L. A. O. Huart.....	Channay
DIVISION B.				
Farmers' Clubs.				
Municipalities of				
North part of township of Adstock.....	S. Ludger Dubreuil.....	St-Méthode.....	Jos. Marois.....	St-Méthode.
Aylmer.....	Rev. P. Meunier.....	St-Sébastien de Beauce.....	Louis Paradis.....	St-Sébastien de Beauce.
South part of Gayhurst.....	Arcadius Fortier.....	St-Samuel de Gayhurst.....	Alph. Couture.....	St-Samuel de Gayhurst.
Lambton.....	Edm. Garant.....	Lambton.....	C. Edmond Godbout.....	Lambton.
Shenly township.....	Thomas Beaudoin.....	St-Honoré.....	Honoré Grégoire.....	St Honoré.
Parishes of				
St-Ephrem de Tring.....	Rev. L. Morrissette.....	St-Ephrem de Tring.....	Edouard Bolduc.....	St-Ephrem de Tring.
St-Benoit Labre.....	Léger Loubier.....	St-Benoit Labre.....	Edmond Rancourt.....	St-Benoit Labre.
St-Hilaire Dorset.....	Naz. Demers.....	St-Hilaire.....	Jos. Morin.....	St-Hilaire.
St-Pierre de Broughton.....	Rev. F. L. Pelletier.....	West Broughton.....	John Doyle.....	West Broughton.
Saints-Anges.....	Thomas Turcot.....	Saints Angés.....	Philippe Grégoire.....	Saints-Anges.
Saint-Ludger.....	Revd. Tel. Soucy.....	St-Ludger.....	Joseph Dubé.....	St-Ludger.

BEAUHARNOIS

Agricultural Society.....	J. G. Laurendeau.....	Beauharnois.....	Wilfrid Martin.....	St-Louis de Gonzague.
Farmers' Clubs,				
Parishes of				
St-Clément de Beauharnois....	J. G. Laurendeau.....	Beauharnois.....	L. C. Tassé.....	Beauharnois.
St-Louis de Gonzague.....	Rev. Eugène Desmarais....	St-Louis Gonzague.....	Wilfrid Martin.....	St-Louis de Gonzague.
St-Stanislas de Kostka.....	Horn. Lalonde.....	St-Stanislas de Kostka....	J. G. Manseau.....	St-Stanislas de Kostka.
St-Timothee	Alp. Julien, (fils)	St-Timothee	L. J. Filiarault	St-Timothee.

BELLECHASSE

Farmers' Clubs.				
Parishes of				
N-D Auxiliatrice de Buckland.	Joseph Boutin	Buckland.....	Alphonse Roy	Buckland.
St-Charles d'Armagh.....	Rev. Cyrille Samson	Armagh	Jos. Langlois	Armagh.
St-Charles Borromée.....	Jos. Samson	St-Charles (rivière Boyer)...	Eugène Gosselin.....	St-Charles (riv. Boyer).
St-Damien	Jules Prudet.....	St-Damien de Buckland....	Arthur Sadeau.....	St-Damien de Buckland.
St-Étienne d'Armagh.....	O. Labrecque	St-Gervais	Jos. Marquis.....	St-Gervais.
St-Lazare.....	Louis Labonté.....	St-Lazare.....	Louis Kennebec.....	St-Lazare.
St-Michel	Rev. Théo. Mercier.....	St-Magloire	Émile Provost.....	St-Magloire.
St-Nérée	Jos. Morissette.....	St-Michel de Bellechasse...	Gaudiose Mercier.....	St-Michel de Bellechasse.
St-Valentin	Jos. Goulet	St-Nérée	Rev. J. Ulric Eastman....	St-Nérée.
St-Valérie	Louis Turgeon	La Payette	Jos. Hudson	La Payette.
	Rev. J. A. N. Goulin	St-Valier	Edmond Ruel.....	St-Valier.

BERTHIER

Agricultural Society.....	Paul Lavallée (Bla.)	Berthierville.....	M. A. L. Aubin.....	Berthierville.
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AGRICULTURAL SOCIETIES AND FARMERS' CLUBS IN THE PROVINCE OF QUEBEC, 1900.—*Continued.*
 BERTHIER.—*Continued.*

SOCIETIES—CLUBS	PRESIDENTS	POST OFFICE ADDRESS	SECRETARIES	POST OFFICE ADDRESS
Farmers' Clubs.				
Municipality of				
Provost.....	Rev. J. B. L. Gagnon.....	St-Zénon.....	Arthur Champagne.....	St-Zénon.
Parishes of				
St-Antoine de Lavaltrie.....	Arcade Pelletier	Lavaltrie.....	Sim. Martineau	Lavaltrie.
St-Barthélemi de Dusabé.....	F. Adélme Côté.....	St-Barthélemi.....	F. E. Rouleau.....	St-Barthélemi.
St-Gabriel de Brandon	Jos. B. Champagne.....	St-Gabriel de Brandon.....	J. E. Archambault	St-Gabriel de Brandon.
St-Cuthbert.....	Dénis Bélanger.....	St-Cuthbert.....	J. O. B. Lafrenière	St-Cuthbert.
St-Genève de Berthier.....	Victor Allard.....	Berthier (en haut).....	Olivier Olivier	Berthier (en haut.)
St-Norbert	Arsène Denis.....	St-Norbert.....	Rod. Ducharme.....	St-Norbert
Visitation de l'Île du Pads.....	A. H. Désy.....	Isle Dupas.....	P. Victor Sylvestre.....	Isle Dupas.
St-Damien de Brandon	Léon Gaboury, fils.....	St-Damien.....	Hororius Boucher.....	St-Damien.
St-Michel des Saints.....	Trefflé Ferland.....	St-Michel des Saints.....	J. L. Alex. Ménard (fils)...	St-Michel des Saints.

BONAVENTURE

Farmers' Clubs.				
Municipalities of				
Maria.....	Rev. J. Gagné.....	Maria.....	Thos. J. Mill.....	Maria.
Carleton	Nicolas Arseneau	Carleton.....	H. J. Martin, M. D.....	Carleton.
Matapédia	Mathias Blaquière.....	St-Alexis	Auguste Trépanier	St-Alexis de Matapédia.
Shoolbred.....	Pierre Cyr.....	Robitaille.....	E. Arseneau	Robitaille.
New-Richmond	Jules LeBlanc.....	Black Cape.....	J. E. Arseneau.....	Little Cascapédia.
Port Daniel-East.....	F. X. Chapados.....	Port Daniel-East.....	George McInnis	Port Daniel-East.
Agric. Society No. 2 Division B...	Hugh Christie.....	New-Carlisle	L. P. Lebel.....	New-Carlisle.
Parishes of				
St-Charles de Caplan.....	Théop. Poirier.....	Musselyville.....	Revd. J. D. Dechamplain..	Musselyville.
Notre-Dame de Paspébiac...	Revd. T. C. Duret.....	Paspébiac.....	P. D. Loisel	Paspébiac.
Mission of				
St-Alphonse de Caplan.....	Chs. Brinck	Musselyville	Victor Onraet.....	Musselyville.

BROME

Agricultural Society	Wm. Corley	Sutton	Geo. F. Hall	Brome.
Farmers' Clubs.				
Municipalities of				
Farnham-East	S. E. Paré	Brigham	Dr B. Joannette	Brigham.
Eastman	Gilbert Roy	Eastman	J. M. Taylor	Eastman.

CHAMBLY

Cooperative Soc. of farmers' clubs	Charles Brunel	Chambly Basin	Alfred Charron	St-Hubert.
Farmers' Clubs.				
Parishes of				
St-Antoine de Longueuil	Félix Delage	Longueuil		
St-Basile le Grand	Sol. Lafleur	St-Basile le Grand	Aimé Lambert	St-Basile le Grand.
St-Basile de Montarville	Fabien Huot	St-Bruno	Leopold Robert	St-Bruno.
St-Famille de Boucherville	Toussaint Daignault	Boucherville	Dr J. A. Demers	Boucherville.
St-Hubert	Alphonse Brouseau	St-Hubert	Frs Robert	St-Hubert.
St-Jacques de Chambly	Ch. Brunelle	Chambly Basin	Médéric Daigault	Chambly Basin.

CHAMPLAIN

Agricultural Society	Joseph Desilets (fils)	St-Maurice	D. T. Trudel	Ste-Genève, Batiscan.
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CHAMPLAIN.—Continued.

SOCIETIES—CLUBS	PRESIDENTS	POST OFFICE ADDRESS	SECRETARIES	POST OFFICE ADDRESS
Farmers' Clubs.				
Parishes of				
Notre-Dame du Mont-Carmel	Revd V. Villeneuve	Valmont.....	Joseph Brunelle.....	Valmont.
Ste-Anne de la Pêrade.....	Tancrède Nobert.....	Ste-Anne de la Pêrade.....	Enoch Lorange.....	Ste-Anne de la Pêrade.
St-Frs-Xavier de Batiscan.....	P. St-Cyr.....	Batiscan.....	Rev'd P. A. A. Bellemare	Batiscan.
St-Luc.....	Rev'd J. Comeau.....	Vincennes.....	Siméon Léveillé.....	Vincennes.
St-Maurice.....	Rev'd Thos. Caron.....	St-Maurice.....	Jos. Lorange.....	St-Maurice.
St-Prosper.....	Clair Massicotte.....	St-Prosper.....	J. B. Massicotte.....	St-Prosper.
St-Stanislas, riv. des Envies.....	Henri Trépanier.....	St-Stanislas de Champlain.	Rev d Théop. Joyal.....	St-Stanislas, Champlain.
St-Sévérin.....	Rev. P. Proulx.....	Proulxville.....	J. A. Lanouette.....	Proulxville.
Ste-Thècle.....	Narcisse Perron.....	Ste-Thècle.....	Médéric Perron.....	Ste-Thècle.
St-Tite.....	Marial Massicotte.....	St-Tite.....	Narcisse Marchand.....	St-Tite.
Visitation de Champlain.....	Séraphin Turcotte.....	Champlain.....	J. E. Marchand.....	Champlain.
St-Narcisse.....	Dr L. H. Paquet.....	St-Narcisse.....	Jos. V. Beaumier.....	St-Narcisse.
St-Théophile du Lac.....	Rev. J. P. Boulay.....	Lac à la Tortue.....	L. P. Marchand.....	Lac à la Tortue.

CHARLEVOIX

Agricultural Society, Division A.	Wm Blackburn.....	Rivière Mailloux.....	Alfred Cimon.....	Malbaie.
Farmers' Clubs.				
Parishes of				
Ste-Agnès.....	Rev. Ls Gagnon.....	Ste-Agnès de Charlevoix...	Ths Gilbert.....	Ste-Agnès de Charlevoix.
St-Etienne de la Malbaie.....	Elie Maltais.....	Rivière Mailloux.....	L. A. Boulianne.....	Malbaie.
St-Fidèle de Mount Murray.....	Rev. A. N. Parent.....	St-Fidèle.....	Wilbrod Bhéreur.....	St-Fidèle.
St-Irénée.....	Jos Bouchard.....	St-Irénée.....	J.-B. Gauthier.....	St-Irénée.
St-Siméon.....	Rev. Jos Savard.....	St-Siméon.....	Louis Tremblay.....	St-Siméon.

Agricultural Society, Division B.	Léandre Bouchard.....	Baie St-Paul.....	Ths. Tremblay.....	Baie St-Paul.
Farmers' Clubs				
Parishes of				
L'Ass. de N.-D. des Eboul...	Abraham Gaudreault.....	Les Eboulements.....	Cléophe Côté.....	Les Eboulements.
St-Hilarion de Settrington...	Norbert Coulombe.....	St-Hilarion.....	Antoine Bouchard.....	St-Hilarion.
Sts-Pierre et Paul B. St-Paul	Jos. Cimon.....	Baie St-Paul.....	Ed. Simard.....	Baie St-Paul
St-Urbain.....	Adam Simard.....	St-Urbain de Charlevoix...	George Larouche.....	St-Urbain de Charlevoix.
St-Louis de l'Île aux Coudes	Louis Harvey.....	Île aux Coudes.....	Odilon Degagné.....	Île aux Coudes
St-Placide.....	Gilbert Bouchard.....	Clairvaux.....	Jos. Côté (Zéph).....	Clairvaux.
Agricultural Society.....	Théodore Brault.....	St-Martine.....	Nap. Mallette.....	St-Martine.
Farmers' Clubs.				
Parishes of				
St-Jean Chrysostôme.....	Jas. P. Brown.....	St-Chrysostôme.....	Jos. Bénard.....	St-Chrysostôme.
St-Martin.....	Eust. Bergeron.....	St-Martine.....	Nap. Mallette.....	St-Martine.
St-Philomène.....	Albert Schink.....	St-Philomène.....	C. Lecavalier.....	St-Philomène.
St-Jacques.....	Nap. Boudon.....	Chateaugay.....	Alfred Robert.....	Chateaugay.
Agricultural Society.....	Wm. Tremblay.....	Chicoutimi.....	Ad. Tremblay.....	Chicoutimi.
Farmers' Clubs.				
Municipalities of				
Bagotville.....	Didyme Bouchard.....	Bagotville.....	W. Lévesque.....	Bagotville.

CHATEAUGUAY

CHICOUTIMI

AGRICULTURAL SOCIETIES AND FARMERS' CLUBS IN THE PROVINCE OF QUEBEC, 1900.—Continued.

CHICOUTIMI.—Continued.

SOCIETIES—CLUBS	PRESIDENTS	POST OFFICE ADDRESS	SECRETARIES	POST OFFICE ADDRESS
Bourget.....	Rev. R. Tremblay.....	St-Charles Borromée.....	Pierre F. Pigeau.....	St-Charles Borromée.
Grande Baie.....	Donat Fortin.....	St-Alexis.....	Ernest Lavoie.....	St-Alexis
Kénogami.....	Laz. Vaillancourt.....	St-Cyrine.....	M. Deneuile.....	St-Cyrine.
Tremblay.....	Cléophe Brassard.....	Tremblay.....	Phydine Gauthier.....	Tremblay.
Chicoutimi.....	Frs. Brassard.....	Chicoutimi.....	Frs. Paradis.....	Chicoutimi.
Parishes of				
N.-D. de Latérière.....	Louis Maltais.....	Latérière.....	Henri Maltais.....	Latérière.
St-Dominique de Jonquières..	Jean Maltais.....	Jonquières.....	Paschal Anger.....	Jonquières.
St-Fulgence.....	Rev. D. O. Dufresne.....	L'Anse-au-Foin.....	Ernest Tremblay.....	L'Anse-au-Foin.
Municipality of				
St-Jean.....	Edouard Harvey.....	L'Anse St-Jean.....	Hylas Houde.....	L'Anse St-Jean.

COMPTON

Agricultural Society No. 1.....	George Hodge.....	Cookshire.....	J. H. Taylor.....	Cookshire.
Farmers' Clubs				
Municipalities of				
Auckland.....	Jos. Lemieux.....	St-Malo.....	J.-B. Beauvais.....	St-Malo.
Chesham.....	Rév. A. Roussan.....	N.-D. des Bois.....	Médard Lavigne.....	N.-D. des Bois.
Clifton.....	O. Desjarlais.....	St-Edwidge.....	Phil. Robert.....	St-Edwidge.
Emberton.....	Chas. Martin.....	Charterville.....	Ed. Landry.....	Charterville.
Hereford.....	Ludger Lazure.....	Paquette.....	Aubert Hamelin.....	Paquette.
Village Waterville.....	M. Ste-Marie.....	Mac's River.....	J. B. M. St-Laurent ..	Compton.
St-Zénon de Piopolis.....	Rev. L. N. Gastonguay.....	Piopolis.....	Walston Gaumont.....	Piopolis.
Agricultural Society No. 2.....	G. F. Cowan.....	Gould.....	C. H. Tambe.....	Robinson.

Farmers' Clubs

Municipalities of

Ditton and Clinton	J.-B. Brousseau	La Patrie	P. L. N. Prévost	La Patrie.
Marston	John F. McDonald	Milan	M. J. N. Murray	Milan.
Whitton	A. Bernier	Sto-Cécile de Whitton	Godefroid Beaudoin	Sto-Cécile de Whitton.
Winslow North	Rev. J. O. Bernier	St-Romain	Jos. Moore	St-Romain.
Marston South	Rev. J. D. Bernier	Valracine	J. J. Turcotte	Valracine.
Winslow South	D. D. Campbell	Milan	M. M. Smith	Milan.

TWO-MOUNTAINS

Agricultural Society

Exarvéniste Gironard

St-Benoit

B. Beauchamp

St-Hermas.

Farmers' Club

Parishes of

St-Augustin	E. Dubois	St-Augustin	Ernest Rochon	St-Augustin.
St-Benoit	D. Pilon	St-Benoit	Joseph Lafonde	St-Benoit.
St-Canut	Alex. McKenzie	St-Canut	L. N. Huot	St-Canut.
St-Hermas	Pierre Constantin	St-Hermas	M. Lafond	St-Hermas.
St-Monique	Nazaire Leroux	St-Monique	Fred. Giroux	St-Monique.
St-Placide	Ephrem Cousineau	St-Placide	L. H. Masson	St-Placide.
St-Scholastique	Henri Groulx	St-Scholastique	Joseph Laugelais	St-Scholastique.

DORCHESTER

Farmers' Clubs

Parishes of

St-Anselme	G. E. Vaillancourt	St-Anselme	Evangeliste Filteau	St-Anselme.
St-Bernard	Joseph Laroche	St-Bernard	J. L. M. Genest, M. D	St-Bernard.
St-Clair	Joseph Lacasse	St-Clair	Anselme Chabot	St-Clair.

AGRICULTURAL SOCIETIES AND FARMERS' CLUBS IN THE PROVINCE OF QUEBEC, 1900.—*Continued.*
DORCHESTER.—*Continued.*

SOCIETIES—CLUBS	PRESIDENTS	POST OFFICE ADDRESS	SECRETARIES	POST OFFICE ADDRESS
St-Edouard de Frampton.....	James Fitzgerald.....	St-Edouard de Frampton....	Jos. Lacasse	St-Edouard de Frampton.
Ste-Hénédine.....	Narcisse Roy.....	Ste-Hénédine	Léonard Boulet	Ste-Hénédine.
St-Isidore.....	H. Guay	St-Isidore.....	Achille Chabot.....	St-Isidore.
St-Justine.....	Ant. Giguère	St-Justine.....	Florent Fortier.....	St-Isidore.
St-Léon de Standon.....	Geo. Audet	Standon.....	Langevin.....	Standon.
Ste Marguerite.....	Rev'd Elói Laliberté.....	Ste-Marguerite.....	Nap. Tanguay.....	St-Marguerite.
St-Prosper de Watford-West.....	Philias Morin.....	St-Prosper de Dorchester....	G. E. Dussault.....	St-Prosper de Dorchester
Ste-Rose de Watford	Amélee Dallaire.....	Ste-Rose de Watford.....	Louis Morin.....	Ste-Rose de Watford.
St-Maximé	P. de Bacourt.....	Scott Junction (Beauce)....	Achille Poliquin.....	Ste-Rose de Watford.
Mission of			Godfroi Grégoire	Scott Junction (Beauce).
St-Nazaire de Buckland.	Praxède Lacroix	St-Nazaire de Buckland.....		St-Nazaire de Buckland.
DRUMMOND				
Agricultural Society.....	Ed. McCabe.....	Wheatland.	George W. Miller.....	Ulverton.
Farmers' Clubs				
Municipalities of				
Durham	Cyrus Husk.....	Ulverton.....	Reginald T. Husk.....	Ulverton.
Durham-South.....	Cyprien Duhamel	South Durham	Fulgence Préfontaine.....	South Durham.
Grantham.....	Rev. Thos. Quinn.....	Grantham.....	J. F. Picotin.....	Drummondville.
Kingscy.....	W. Wadleigh.....	Kingscy.....	Etienne LeBel.....	French Village.
Wendover and Simpson.....	Rev. F. E. Connolly.....	St-Cyrille de Wendover.....	D. Guèvremont.....	St-Cyrille de Wendover.
Wickham-West.....	Rev. A. de Courval.....	Wickham-West	J. E. Moulin	Wickham-West.
Parishes of				
St-Eugène de Grantham.....	Ludger Bélisle	St-Eugène de Grantham....	J. Avila Viger M. D.	St-Eugène de Grantham.
St-Germain de Grantham	Patrick Doré.....	St-Germain de Grantham....	L. N. Colnoir.....	St-Germain de Grantham

GASPÉ

Agricultural Soc., No 1, Div. A. Jos. X. Lavoie.....	Gaspé.....	James M. Remon.....	Percé.
Farmers' Clubs			
Parish of			
St-Michel de Percé.....	Percé.....	Wm Flynn.....	Percé.
Division A. No. 2			
St-Martin de la Riv. au Renard Rev'd E. Morris.....	Fox River.....	Paul Blouin	Fox River.
Agricultural Soc., No. 2, Div. B. Telesphore Turbide.....	Havre aux Maisons.....	P. L. Joncas.....	Havre aux Maisons.
Division C. No. 1			
Farmers' Clubs.			
Parishes of			
Ste-Anne des Monts.....	Ste-Anne des Monts.	Jos. Thibault	Ste-Anne des Monts.
St-Norbert du Cap Chat.....	Cap Chat.....	Gustave Roy.....	Cap Chat.

HOCHELAGA

Agricultural Society	D. Jérôme Desautels.....	N.-D. de Grâce.....	St-James Montreal.
Farmers' Clubs.			
Parish of			
St-Joseph, Riv. des Prairies..	Frs. Armand.....	Rivière des Prairies..	Rivière des Prairies.

AGRICULTURAL SOCIETIES AND FARMERS' CLUBS IN THE PROVINCE OF QUEBEC, 1900.—*Continued.*

HUNTINGDON

SOCIETIES-CLUBS	PRESIDENTS	POST OFFICE ADDRESS	SECRETARIES	POST OFFICE ADDRESS
Agricultural Society, Div. A....	A. Muir, Sr	Huntingdon	W. S. MacLaren.....	Huntingdon.
Agricultural Society, Div. B....	J. McCause.....	Hemmingford.....	Robert Ellerton.....	Hemmingford.

IBERVILLE

Agricultural Society	Jos. Breault.....	St-Alexandre.....	J. E. Boivin	St-Alexandre.
Farmers' Clubs.				
Parishes of				
St-Alexandre	Joseph Breault	St-Alexandre.....	J. E. Boivin	St-Alexandre.
St-Athanase de Bleury	Solymé Davignon	Iberville.....	Ludger Bessette.....	Iberville.
St-Brigide de Monnoir.....	Alfred Dextrase.....	St-Brigide d'Iberville.....	J. R. B. Langevin.....	St-Brigide d'Iberville.
St-George de Henryville.	Noël Brossseau.....	Henryville	L. H. Trudéau.....	Henryville.
St-Grégoire le Grand.....	Pierre Dextrase	Mount Johnson	J. B. Chevalier.....	Mount Johnson.
St-Sébastien	Pierre Breault	St-Sébastien	J. E. Godreau.....	St-Sébastien.

JACQUES-CARTIER

Agricultural Society	Wm. Tait.....	St-Laurent.....	J. A. Chaurest, N. P.	Ste-Geneviève.
Farmers' Clubs.				
Parishes of				
Ste-Geneviève.....	J. A. Chaurest N. P.	Ste-Geneviève	Dan. Ladouceur, M. D.....	Ste-Geneviève.
St-Raphael de l'Isle Bizard.....	Honoré Sénécal.....	Isle Bizard	Obs. Colombier	Isle Bizard.
Ste-Anne du Bout de l'Isle...	Revd Brother Léonard.....	Ste-Anne de Bellevue...	Bruno Lalonde.....	Ste-Anne de Bellevue.

JOLIETTE

Agricultural Society No. 1.....	J. B. A. Richard.....	Joliette	A. Fontaine.....	Joliette.
Farmers' Clubs.				
Parishes of				
St-Ambroise de Kildare.....	Urgel Perrault.....	Kildare	Octave Beaulieu	Kildare.
St-Charles Borromée.....	J. B. A. Richard.....	Joliette.....	A. Fontaine.....	Joliette.
St-Elizabeth.....	Ariside Boucher.....	Ste-Elizabeth	Jos. L. Forget.....	Ste-Elizabeth.
Ste-Mélanie.....	Narcisse Massicotte.....	Ste-Mélanie	Gaspard Lavoie.....	Ste-Mélanie.
St-Thomas de Jersey-Nord...	Arthur Marion.....	St-Thomas de Joliette.....	Moise Masse.....	St-Thomas de Joliette.
Agricultural Society No. 2.....	Geo. Clermont	St-Jean de Matha	Amédée Dugas.....	St-Jean de Matha.
Farmers' Clubs.				
Parishes of				
Le B-Alphonse de Rodriguez.	L. A. Olivier, M. D.....	St-Alphonse.....	Prosper Theriault	St-Alphonse.
Ste-Béatrix.....	Godfroi Lemire	Ste-Béatrix.....	Pierre Gariépy	Ste-Béatrix.
St-Côme.....	Eugène Dalphond.....	St-Côme	C. Poitras	St-Côme.
Ste-Émilie de l'Énergie.....	Cyrille Bellerose	Ste-Émilie de l'Énergie.....	Jérémie Boucher	Ste-Émilie de l'Énergie.
St-Félix de Valois.....	G. Gravel	St-Félix de Valois.....	Dr V. P. Lavallée.....	St-Félix de Valois.
St-Paul de Lavallière.....	Onésime Lafortune.....	St-Paul d'Industrie.....	Jos. Venne	St-Paul d'Industrie.
St-Gilphas de Brandon.....	Paul Lafertière	St-Gilphas.....	Maxime Poirier	St-Gilphas.
St-Jean de Matha.....	Ed. Lessard.....	St-Jean de Matha	J. F. Coyle.....	St-Jean de Matha.

AGRICULTURAL SOCIETIES AND FARMERS' CLUBS IN THE PROVINCE OF QUEBEC, 1900.—*Continued.*

KAMOURASKA

SOCIETIES—CLUBS	PRESIDENTS	POST OFFICE ADDRESS	SECRETARIES	POST OFFICE ADDRESS
Farmers' Clubs.				
Parishes of				
Notre-Dame du Mont Carmel.	Egésippe Massé.	Mont Carmel	Maxime Sirois	Mont Carmel.
N.-D. de la Rivière Ouelle.	Rev. Ad. Michaud	Rivière Ouelle	J. L. Martin	Rivière Ouelle.
St-Alexandre.	Geo. Bérubé	St-Alexandre.	Régent Fortin	St-Alexandre.
St-André	Joseph Dumont	St-André.	A. C. Marquis	St-André.
St-Anne de la Pocatière.	Rev. Jos Richard	St-Anne de la Pocatière.	Louis J. Bérubé	St-Anne de la Pocatière.
St-Denis.	Rev. C. S. Brochu	St-Denis de la Boutteillerie.	Honorat Dumais	St-Denis, Boutteillerie.
St-Hélène	Gabriel Bérubé	St-Hélène.	Rev. B. C. Guy.	St-Hélène.
St-Louis de Kamouraska.	C. T. Dugal	Kamouraska	J. A. Blanchet	Kamouraska.
St-Pacôme	François Lévéque.	St-Pacôme.	Louis Gagnon	St-Pacôme.
St-Paschal.	Jos. Hudon	St-Paschal	Rev. J. U. Perron	St-Paschal
St-Philippe de Néri	Rev. L. O. Tremblay	St-Philippe de Néri.	D. Dionne	St-Philippe de Néri.
Municipality of				
Pohenegamook.	Bruno Ouellet	St-Eleuthère	Rev. D. Chenard	St-Eleuthère
LAKE ST. JOHN				
Agricultural Society	Aug. R. Hudon	Hébertville Station	Nap. P. Hudon	Hébertville.
Farmers' Clubs.				
Township of				
Albanel.	Ant. Laprise	Albanel	Simon Martel	Albanel.
Municipalities of				
Normandin and Albanel	Alphonse Poirier	Normandin	Origène Cautin	Normandin.
N.-D. Rivière au Doré.	Jean Coulombe	Rivière au Doré.	Frs. Gauthier	Rivière au Doré.

Municipality of

St-Méthode.....

Alph. Richard

Tikouabé.....

Jos. Giguère.....

Tikouabé,

Parishes of

Noire-Dame du Lac St-Jean..

Rev. J. E. Lizotte.....

Roberval.....

Alf. J. Brassard.....

Roberval,

St-Bruno.....

Julius Bergeron.....

Pasteur.....

Amédée Fortin.....

Pasteur.

St-Cœur de Marie.....

Théotime Larouche.....

Delisle.....

Ferd. Larouche.....

Delisle,

St-Félicien

Damase Ouellet

St-Félicien.....

Nap. Lessard.....

St-Félicien.

St-Gédéon

Wilfrid Simard

St-Gédéon.....

Joseph Girard, M. P. P.....

St-Gédéon.

St-Henri de Péribonca.....

Wm. Tremblay.....

Taillon.....

Simon Gaudreault.....

Taillon,

St-Jérôme du Lac St-Jean.....

Jos. Boily.....

Métabetchouan.....

Thomas Noël.....

Métabetchouan.

St-Joseph d'Alma.....

Louis Collard

St-Joseph d'Alma.....

Gédéon Verreault.....

St-Joseph d'Alma.

St-Louis de Métabetchouan ..

H. de GrandMaison.....

Chambord.....

Ephrem Lapointe.....

Chambord.

St-Prime.....

Louis Vézina.....

St-Prime

Paul Marcoux.....

St-Prime.

St-Thomas d'Aquin.....

Xavier Lapointe.....

Dablon

Guillaume Larouche

Dablon.

LAPRAIRIE

Agricultural Society...

Alex. Ste Marie.....

St-Constant.....

Alf. Brosseau.....

Laprairie.

Farmers' Clubs.

Parishes of

St-Constant

Odilon Longtin

St-Constant

F. E. Arnould.....

St-Constant.

St-Isidore.....

Arthur Dubuc.....

St-Isidore.....

Edmond Guérin.....

St-Isidore.

St-Jacques le Mineur.....

Rémi Tétreault.....

St-Jacques le Mineur.....

Amédée Filion.....

St-Jacques le Mineur.

L'ASSOMPTION

Agricultural Society.....

Philéas Charpentier.....

L'Epiphanie.....

I. J. A. Marsau

L'Assomption.

AGRICULTURAL SOCIETIES AND FARMERS' CLUBS IN THE PROVINCE OF QUEBEC, 1900.—*Continued.*

L'ASSOMPTION.—*Continued.*

SOCIETIES—CLUBS	PRESIDENTS	POST OFFICE ADDRESS	SECRETARIES	POST OFFICE ADDRESS
Farmers' Clubs.				
Parishes of				
L'Assomption de Repentigny	Nap. Thifault	Repentigny	J. U. Perreault	Repentigny.
L'Epiphanie	Ludger Thoun	L'Epiphanie	Philias Charpentier	L'Epiphanie.
St-Charles de Lachenaie	Ferrier Mathieu	Lachenaie	Odilon Villeneuve	Lachenaie.
St-Henri de Mascouche	Arthur Mathieu	Mascouche	J. P. Lamarche	Mascouche.
St-Paul l'Ermite	Albert Brien	St-Paul l'Ermite	Jos. Marion, M. P.	St-Paul l'Ermite.
St-Pierre du P'tage de l'Ass.	I. J. A. Marsan	L'Assomption	Louis Desmarais	L'Assomption.
St-Roch de l'Achigan	Simon Forest	St-Roch de l'Achigan	Louis Poitras	St-Roch de l'Achigan.
St-Sulpice	F. X. Plouffe	St-Sulpice	Nap. Peltier	St-Sulpice.
LAVAL				
Agricultural Society	Isaie Ouimet	Ste-Rose	Dr. E. Ouimet	Ste-Rose.
Farmers' Clubs.				
Parishes of				
Ste-Dorothée	Louis Lacroix	Ste-Dorothée	Narcisse Lepage	Ste-Dorothée.
St-François de Sales	Jos. G. Gascon	St-François de Sales	L. C. Forget	St-François de Sales.
St-Martin	Trefflé Hotte	St-Martin	J. W. Lavoie, N. P.	St-Martin.
Ste-Rose de Lima	Wilfrid Ouimet	Ste-Rose	Dr. E. Ouimet	Ste-Rose.
St-Vincent de Paul	Luc Charbonneau	St-Vincent de Paul	Ls. C. Goyette	St-Vincent de Paul.

LÉVIS

Farmers' Clubs.				
Parishes of				
St-David de Lauberivière.....	Rev. H. Desjardins.....	St-David de Lévis.....	Jas. McCready.....	Hadlow.
St-Etienne de Lauzon.....	Majorique Dubois.....	Baillargeon.....	Frs. J. Martel.....	Baillargeon.
St-Henri de Lauzon.....	Rev. F. Laliberté.....	St-Henri de Lévis.....	Théodore Dussault.....	St-Henri de Lévis.
St-Lambert.....	Frédéric Morin.....	St-Lambert de Lévis.....	Aristide Gagné.....	St-Lambert de Lévis.
St-Joseph de la Pointe Lévy.....	Alphonse Roy.....	Village Lauzon.....	H Bourassa.....	Village Lauzon.
St-Nicolas.....	Polycarpe Olivier.....	Darveau.....	Ignace Paquet.....	St-Nicolas.
N.-D. de la Victoire.....	Théop. Carrier.....	Lévis.....	Frs. Labrie.....	N.-D. de Lévis.

L'ISLET

Agricultural Society.....	A. M. Déchène.....	Village des Aulnaies.....	Jos. Ed. Caron.....	Ste-Louise.
Farmers' Clubs.				
Parishes of				
St-Aubert.....	Damase Deschênes.....	St-Aubert.....	Revd. L. N. Lessard.....	St-Aubert.
N.-D. de Bonsecours de l'Islet.....	Ferd. Rodrigue.....	L'Islet.....	F. X. Cloutier.....	L'Islet.
St-Cyrille de Lessard.....	Revd. Cha. Baillargeon.....	St-Cyrille de l'Islet.....	Irénée Lord.....	St-Cyrille de l'Islet.
St-Basile.....	Ed. Pelletier.....	Lamartine.....	Alf. Bédanger.....	Lamartine.
St-Jean Port Joli.....	Revd. O. E. Frenette.....	St-Jean Port Joli.....	Nap. Gosselin.....	St-Jean Port Joli.
St-Louis.....	Revd. G. Guy.....	St-Louis.....	Louis Gagnon.....	Ste-Louise.
St-Marcel de l'Islet.....	J. Edm. Duhauc.....	St-Marcel.....	Revd. F. X. A. Duhauc.....	St-Marcel.
St-Pamphile.....	Revd. S. H. Lessard.....	St-Pamphile.....	Chrysostôme Fortin.....	St-Pamphile.
St-Pasipéne.....	Revd. Ed. Martin.....	Garneau.....	Joseph Pelletier.....	Garneau.
St-Roch des Aulnaies.....	Odilon Pelletier.....	St-Roch des Aulnaies.....	G. A. Pelletier.....	St-Roch des Aulnaies.

AGRICULTURAL SOCIETIES AND FARMERS' CLUBS IN THE PROVINCE OF QUEBEC, 1900.—Continued.

LOTBINIERE.

SOCIETIES—CLUBS	PRESIDENTS	POST OFFICE ADDRESS	SECRETARIES	POST OFFICE ADDRESS
Division No 1.				
Farmers' Clubs.				
Parishes of				
St-Agathe.....	Michel Carrier.....	St-Agathe de Lotbinière....	Cyprien Morissette.....	St-Agathe de Lotbinière
St-Gilles de Beauvillage.....	Félix Boyle.....	St-Gilles.....	Rev. J. F. Ed. Paquet.....	St-Gilles.
St-Narcisse de Beauvillage.....	Baptiste Gaux.....	Newbois.....	Didace Kirouac.....	Newbois.
St-Patrice de Beauvillage.....	John Brown.....	New-Armagh.....	And. W. Orr.....	New-Armagh.
St-Sylvestre.....	Hugh Doherty.....	St-Sylvestre East.....	Jos. F. Pageau, M. D....	St-Sylvestre-East.
Division No. 2.				
Farmers' Clubs.				
Parishes of				
St-Agapit de Beauvillage.....	Isaie Demers.....	St-Agapit.....	Alfred Paquet.....	St-Agapit.
St-Antoine de Tilly.....	Obs. Bergeron.....	St-Antoine.....	Rev. Alb. Rouleau.....	St-Antoine de Lotbinière
St-Croix.....	Rémi Desrochers.....	St-Croix.....	Siméon Desrochers.....	St-Croix.
St-Edouard.....	Onésime Ouellet.....	Rivière Bois-Clair.....	Philippe Gagné.....	Rivière Bois-Clair.
St-Emélie de Lotbinière.....	Aln. Parrot.....	Leclercville.....	Edmond Bernard.....	Leclercville.
St-Flavien.....	Désiré Paquet.....	St-Flavien.....	Aubert Lambert.....	St-Flavien
St-Jean d'Eschallons.....	Rev. P. O. Drolet.....	St-Jean d'Eschallons.....	Ths. Barrabé.....	St-Jean d'Eschallons.
St-Louis de Lotbinière.....	Philéas Bouchet.....	Lotbinière.....	Siméon Bernard.....	Lotbinière.
St-Philomène de Fortierville	Gédéon Tousignant.....	St-Philomène d'Eschall...	Rev. M. Moreau.....	St-Philomène d'Esch.

MASKINONGÉ

Agricultural Society.....	H. Mayrand	St-Léon.....	Clovis Caron	Louiseville.
Farmers' Clubs				
Parishes of				
St-Alexis	Rev'd A. O. Savoie.....	St-Alexis des Monts.....	J. V. Milot	St-Alexis des Monts.
St-Antoine de la Riv. du Loup	Ed. Martin.....	Louiseville	Jérémie L. Desaulniers	Louiseville.
St-Charles de Mastigoche.....	Henry Bergeron.....	St-Charles de Mastigoche.....	Rev'd J. G. Laguerre.....	St-Charles de Mastigoche
St-Didace.....	Edmond Hamelin.....	St-Didace	Rev'd J. E. Heroux.....	St-Didace.
St-Joseph de Maskinongé.....	Noé Bruneau.....	Pont de Maskinongé	J. B. E. Magnan	Pont de Maskinongé.
St-Justin.....	Dr C. J. Coulombe.....	St-Justin	E. M. Chapdelaine	St-Justin.
St-Léon le Grand	Frs. Paquin	St-Léon.....	Jos. Fleury.....	St-Léon.
St-Paulin.....	Rev'd J. A. E. Ladéche.....	St-Paulin.....	Pierre Julien	St-Paulin.

MEGANTIC

Agricultural Society, No 1.....	John W. Mooney	Inverness	James Stuart	Inverness.
Farmers' Clubs				
Municipalities of				
Island North	Rev'd J. O. Langlois	Richardville	Nap. Carignan.....	Richardville.
Island East.....	Michael Galvin.....	West Broughton	J. F. Scallan	West Broughton.
Leeds.....	W. Wilson	Wilson's Mills.....	W. J. Jamieson	Leeds Village.
Thetford-North	God. Gamache	Sacré-Cœur de Marie.....	Rev'd F. X. Couture.....	Sacré-Cœur de Marie.
Thetford-South	Louisa Martel.....	Thetford Mines.....	J. O. Vallières.....	Thetford Mines.
Agricultural Society, No 2.....	Jos. Vignault.....	Ste-Sophie de Mégantic	J. B. Vallée	Somerset.
Farmers' Clubs				
Municipalities of				
Halifax-North.....	Gamille Roberge	Ste-Sophie.....	Jos. Vigneau.....	Ste-Sophie.
Halifax-South.....	Rev'd J. D. H. Michaud.....	Bernierville	P. A. Larochelle.....	Maple Grove.
Parish of				
Ste-Julie of Somerset.....	Rev'd P. P. Dubé	Ste-Julie.....	J. O. Paradis.....	Ste-Julie.

AGRICULTURAL SOCIETIES AND FARMERS' CLUBS IN THE PROVINCE OF QUEBEC, 1900.—*Continued.*

MISSISQUOI

SOCIETIES—CLUBS	PRESIDENTS	POST OFFICE ADDRESS	SECRETARIES	POST OFFICE ADDRESS
Agricultural Society	J. M. Hill, Jr.	Morse's Line Vt.	Geo. Sully	Bedford.
Farmers' Clubs				
Municipalities of				
Dunham	H. H. Hibbard	Dunham	W. E. O'Brien	Dunham.
Farnham-West	Alp. Provost	Farnham	A. E. D'Artois	Farnham.
Town of Bedford	J. B. J. Poissant	Bedford	A. J. Bouchard	Bedford.
N.-D. de Stanbridge	J. J. B. Gosselin	N.-D. de Stanbridge	Theop. Menard (fils)	N.-D. de Stanbridge.

MONTCALM

Agricultural Society	Amédée Dugas	St-Jacques de l'Achigan...	J. E. E. Marion	St-Jacques de l'Achigan.
Farmers' Clubs				
Municipalities of				
Chertsey	Olivier Lapierre	St-Théodore	Jules Brault	St-Théodore.
Kilkenny	Placide Gamache	St-Calixte de Kilkenny	Médéric Duval	St-Calixte de Kilkenny.
Wexford	J. L. Perreault	St-Emile de Montcalm	Emile Grenier	St-Emile de Montcalm.
Parishes of				
St-Alexis	A. Beaudry	St-Alexis de Montcalm	O. Magnan	St-Alexis de Montcalm.
St-Donat	Léandre Goutu	St-Donat	Revd. J. L. H. Major	St-Donat.
St-Jacques de l'Achigan	Blaise Dugas	St-Jacques	L. V. Labelle	St-Jacques.
Ste-Julienne	Frank Dupuis	Ste-Julienne	P. Malhot	Ste-Julienne.
St-Liguori	Ludger Brisson	St-Liguori	Nap. Rivet	St-Liguori.
Ste-Marie Salomée	Lucien Martin	Ste-Marie Solomée	Octave Brien	Ste-Marie Salomée.

MONTMAGNY

Agricultural Society, Div. A.....	Hon. Phil. Landry.....	Quebec.....	Jacques Collin.....	Montmagny.
Farmers' Clubs.				
Municipality of Montmagny.....	Revd. S. Richard.....	St-Paul du Buton.....	Théophile Nicole.....	St-Paul du Buton.
Parishes of				
St-Antoine de l'Isle aux Grues	Revd. J.B. Thiboutot.....	L'île aux Grues.....	Raphaël Boulet.....	L'île aux Grues.
Cap St-Ignace.....	Rev. Jos. N. Sirois.....	Cap St-Ignace.....	Jos. V. Coté M. D.....	Cap St-Ignace.
St-François de Sales de la riv. du Sud.....	Revd. G. Pelletier.....	St-François.....	Jos. Vachon.....	St-François.
N.-D. du St-Rosaire.....	Art. Lemieux.....	Mercier, Côté Bellechasse.....	Rev. L. A. A. Talbot.....	N.-D. du St-Rosaire.
St-Pierre riv. du Sud	Rev. T. Delagrave.....	St-Pierre riv. du Sud.....	Geo. Blais.....	St-Pierre riv. du Sud.

MONTMORENCY

Agricultural Society, Div. A.....	F. X. Laplante.....	Château Richer.....	Joseph Cloutier.....	Riv. aux Chiens.
Farmers' Clubs.				
Parishes of				
St-Anne de Beaupré.....	Rev. P. Ed. Lamontagne.....	Beaupré.....	Pierre Marquis.....	Beaupré.
Angé Gardien.....	Cyrille Hébert.....	Angé Gardien.....	Pierre Gaudin.....	Angé Gardien.
St-Jacques de Laval.....	Jos. Gagnon.....	Laval.....	Oct. Langevin.....	Laval.
St-Férol.....	Rev. G. A. Lemieux.....	St-Férol.....	Joseph Simard.....	St-Férol.
St-Joachim.....	Rev. J. G. McCrea.....	St-Joachim.....	Adélaïde Bouchard.....	St-Joachim.
St-Tite des Caps.....	Rev. A. Luchance.....	St-Tite des Caps.....	Tel. Ferland.....	St-Tite des Caps.
Union N.-D. Chât Richer.....	Rev. A. Gingras.....	Château Richer.....	Jos. Prémont.....	Château Richer.
Agricultural Society Div. B.....	Mons. Lefebvre.....	St-Famille.....	J. Ed. Bailly.....	St-Famille.
Farmers' Clubs.				
Parishes of				
St-François de Sales.....	Louis Giguère.....	St-François I.O.....	Jos. Asselin.....	St-François I. O.

AGRICULTURAL SOCIETIES AND FARMERS CLUBS IN THE PROVINCE OF QUEBEC, 1900.—*Continued.*

MONTMORENCY.—*Continued.*

SOCIETIES—CLUBS	PRESIDENTS	POST OFFICE ADDRESS	SECRETARIES	POST OFFICE ADDRESS
Ste-Famille.....	Jean Prémont.....	Ste-Famille, I. O.....	Jos. Ed. Boily	Ste-Famille I. O.
St-Jean-Baptiste.....	Rev. J. A. Rainville.....	St-Jean I. O.....	Gaud. Gagnon.....	St-Jean I. O.
St-Laurent.....	Romuald Pelletier.....	St-Laurent I. O.....	Pierre Bouffard.....	St-Laurent I. O.
Sts-Pierre et Paul.....	Léon Aubin.....	St-Pierre I. O.....	Victor Ferland.....	St-Pierre I. O.
NAPIERVILLE				
Agricultural Society.....	Frédéric Durivage.....	St-Edouard de Napierville.	Art. Collette	St-Rémi.
Farmers' Clubs.				
Parishes of				
St-Cyprien de Defery.....	L. N. McQueen.....	Napierville	Dr. Ls. D. Rochette.....	Napierville.
St-Edouard	Ex. Serre	St-Edouard de Napierville.	Mag. Blain.....	St-Edouard de Nap.
St-Michel.....	Alp. Laberge.....	St-Michel de Napierville. ...	M. Coupal	St-Michel de Napierville.
St-Patrice de Sherrington. ...	Michael O'Meara	Sherrington.....	Adjuiteur Guardin.....	Sherrington
St-Rémi de la Salle.....	Chs Laporte.....	St-Rémi	Arthur Colette.....	St-Rémi.
NICOLET				
Agricultural Society.....	Félix Cormier.....	Ste-Gertrude.....	Nap. Levasseur.....	Ste-Angèle de Laval

Farmers' Clubs.

Parishes of

Nativité de Bécancour.....	Rev. A. E. Raiche.....	Bécancour.....	J. D. E. Mayrand.....	Bécancour.....
Ste-Angèle de Laval.....	Rev. V. S. de Carufel.....	Ste-Angèle de Laval.....	Léon Denoncourt.....	Ste-Angèle de Laval.....
Ste-Brigitte des Saults.....	F. J. Jutras.....	Ste-Brigitte des Saults.....	J. Albert Jutras.....	Ste-Brigitte des Saults.....
St-Célestin.....	Rev. Ed. Brunelle.....	St-Célestin.....	Nazaire Pratte.....	St-Célestin.....
St-Edouard de Gentilly.....	Art Beaumier.....	Gentilly.....	J. L. Tourigny.....	Gentilly.....
Ste-Eulalie.....	Rev. A. Longval.....	Ste-Eulalie.....	Alp. Bergeron.....	Ste-Eulalie.....
Ste-Georgette.....	Alex. Leblanc.....	Ste-Georgette.....	J. H. E. Veilleux.....	Ste-Georgette.....
St-Géorgiole le Grand.....	Rev. Ed. Grenier.....	St-Géorgiole.....	A. McDonald.....	St-Géorgiole.....
St-Jean-Baptiste de Nicolet.....	Frs. Manseau.....	Nicolet.....	Ovide Courchesne.....	Nicolet.....
Ste-Marie de Blandford.....	David Beauchesne.....	Ste-Marie de Blandford.....	Edmond Morissette.....	Ste-Marie de Blandford.....
Ste-Monique.....	Nap. Champagne.....	Ste-Monique de Nicolet.....	Jos. Descoteaux.....	Ste-Monique de Nicolet.....
Ste-Perpétue.....	Damase Crépeau.....	Ste-Perpétue.....	Théo. Descoteaux.....	Ste-Perpétue.....
St-Pierre les Becquets.....	Dr D. E. Archambault.....	St-Pierre les Becquets.....	Oscar Beauchemin.....	St-Pierre les Becquets.....
St-Sophie de Lévis.....	Télesphore Demers.....	St-Sophie de Lévis.....	Dositheée Fournier.....	St-Sophie de Lévis.....
St-Sylvestre.....	Philippe Richard.....	St-Sylvestre.....	Jos. Lévi Janelle.....	St-Sylvestre.....
St-Wenceslas.....	Ludger Deshais.....	St-Wenceslas.....	David Héon.....	St-Wenceslas.....

OTTAWA

Agricultural Society No. 1, Div. A	D. Stewart.....	Aylmer-East.....	N. E. Cormier.....	Aylmer-East.....
Farmers' Clubs.				
Parish of L'Ange Gardien.....	J. P. Brady.....	Bassin du Lièvre.....	J. H. Clément.....	Angers.....
Agricultural Society No. 2, Div. A	Hector Chauvin.....	Montebello.....	J. E. O. Caron.....	Montebello.....
Farmers' Club.				
Parish of N.-D. de Bonsecours.....	Hector Chauvin.....	".....	J. E. O. Caron.....	".....
Farmers' Clubs.				
Municipalities of Buckingham.....	H. J. Pratt.....	Buckingham.....	John E. Gagnon.....	Buckingham.....
Thurso.....	Rev. J. Chuteau.....	Thurso.....	G. Gagnon.....	Thurso.....
Parish of St-André Avelin.....	H. N. Eaby.....	St-André Avelin.....	Dr J. Baulhé.....	St-André Avelin.....

AGRICULTURAL SOCIETIES AND FARMERS' CLUBS IN THE PROVINCE OF QUEBEC, 1900.—*Continued.*
 OTTAWA.—*Continued.*

SOCIETIES—CLUBS	PRESIDENTS	POST OFFICE ADDRESS	SECRETARIES	POST OFFICE ADDRESS
Ste-Angélique.	Eugène Gourdine.....	Papineauville.	J. P. Gauthier.....	Papineauville.
Agricultural Society No. 2, Div. B	Rev'd Chs. Proulx.....	Labelle	J. A. Lalande.....	Nominigüe.
Farmers' Clubs.				
Municipalities of				
Amherst.....	Nap. Lavigne	St-Rémi d'Amherst.	Philémon Turcotte.....	St-Rémi d'Amherst.
Earley.....	P. B. Martel	Luskville	L. J. W. Hudon.....	Luskville.
Hartwell.....	Samuel Bédard.....	Cheneville	J. H. Chevrier.....	Cheneville.
Loranger	David Lefèvre	Nominigüe	Maxime Nantel.....	Nominigüe.
Ripon	Max Sabourin	Ripon	Alb. Aubry, M. D.....	Ripon
Pousoinby	Léon Tessier.....	Vernet	Onésime Chamberot.....	Brookdale.
Parishes of				
Joly township.....	Rev. Chs Proulx.....	Labelle	P. E. Forget.....	Labelle.
L'Annonciation de Marchand.	Dosithe Boileau.....	L'Annonciation	Alphonse Boileau	L'Annonciation.
N-D. de la Fourvière.....	Rev. A. Desjardins.....	Rapide de l'Original.....	E. Phaneuf	Rapide de l'Original.
Suffolk and Addington.....	Ambroise Desormeaux.....	St-Emile de Suffolk.....	J. A. Dauvissat.....	St-Emile de Suffolk.
PONTIAC				
Agricultural Society, Division A.	John Young.....	Bristol	E. Graham	Elmside.
Municipalities of				
South part of township of				
Onslow.....	W. Burden.....	Billerica	R. S. Walsh.....	Quyón.
Bristol township.....	George Cuthbertson.....	Elmside	Albert H. Baird	Elmside.
Agricultural Society, Division B.	Thos. Fitzpatrick.....	Chapeau Village.....	P. McMahon.....	Chapeau.
Farmers' Clubs.				
Municipalities of				
Township of				
Grand Calumet	Rev'd G. A. Picotte.....	Calumet Island.....	John Kelleker.....	Calumet Island.

PORTNEUF

Agricultural Society	Gamille Germain	Cap Santé	S. Delisle	Cap Santé
Farmers' Clubs.				
Parishes of				
N-D des Anges de Montanban	Victor Bertrand	Montanban	Siméon Lessard	Montanban.
St-Alban d'Alton	Alfred Naud	Poiré	Jos Savard	St-Alban.
St-Augustin de Demaure	Louis Jobin	St-Augustin	Edmond Valin	Bélaire.
St-Basile	Révd. A. Gauthier	St-Basile	Dolor Descarreau	St-Basile.
St-Casimir	Oct. Laganrière	St-Casimir	T. V. Trotter	St-Casimir.
St-Charles de Grondines	Louis Archambault	Grondines	Louis Côté	Grondines.
St-Christine	Jean Frenette	Auveigne	Révd M. Bernard	Auveigne.
St-Famille du Cap Santé	L. P. Bernard, N.P.	Cap Santé	S. Delisle	Cap Santé.
St-F de Pte aux Trembles	G. A. Larue	Pointe aux Trembles	Alfred Clermont	Pointe aux Trembles
St-Gilbert	Louis Julien	St-Gilbert	Bertrand Girard	St-Gilbert.
St-Jeanne de Neuville	Chs. Pelletier	Pont Rouge	Ensebe Charpentier fils	Pont Rouge
St-Joseph de Deschambault	Grégoire Paquin	Deschambault	Alfred Arcand	Deschambault.
St-J-Bite des Ecureuils	Jacob Denis	Les Ecureuils	Mat. Savard	Les Ecureuils.
St-Léonard de Port Maurice	Louis Lesage	St-Léonard	Louis Verreault	St-Leonard.
St-Raymond Noma	Norbert Trudel	St-Raymond	Cyprien Paré	St-Raymond.
St-Rémi	E. Teasdale	Lac aux Sables	Jos H Boudreau	Lac aux Sables.
St-Thuribe	Phil. Gréte	St-Thuribe	Elz. Lachance	St-Thuribe.
St-Ubalde	Ludger Hardy	St-Ubalde	Octave Bédard	St-Ubalde.

QUEBEC

Agricultural Society	Chs. E. Dubord	Beauport	J. B. Delage, N.P.	No. 54, Bridge St, Qué.
Farmers' Clubs.				
Parishes of				
St-Charles de Beauport	Ondésime Paquet	Grand Désert	Pierre Déry	Grand Désert
N-D. de Miséric. de Beauport	Victorien Parent	Beauport	Edmond C. Giroux	Beauport.
St-Foye	Dr M.H. Brophy	St-Foye	Ulric J'Heureux	St-Foye.
St-Gab. de Valcartier	Wm B McBurn	Valcartier, village	John McBurn	Valcartier.
Municipality of				
St-Charles de Charlesbourg	Jos. Paquet	Charlesbourg	David Paradis	Charlesbourg.
Agric. Soc. of City of Quebec	S. Lesage	Quebec	F. Connolly	Petite Rivière.

AGRICULTURAL SOCIETIES AND FARMERS' CLUBS IN THE PROVINCE OF QUEBEC, 1900.—Continued.

RICHELIEU

SOCIETIES—CLUBS	PRESIDENTS	POST OFFICE ADDRESS	SECRETARIES	POST OFFICE ADDRESS
Agricultural Society.....	Elie Girouard	Ste-Victoire	P. Félix Harpin.....	St-Ours.
Farmers' Clubs.				
Parishes of				
St-Aimé	Rev. M. Godard.....	St-Aimé	P. Gagner, M. D.....	St-Aimé.
St-Anne de Sorel.....	Ed. Latraverse.....	St-Anne de Sorel	Narcisse Péroquin.....	St-Anne de Sorel.
St-Joseph.....	Rev. Esdras Rivard.....	St-Joseph de Sorel	Joseph Lœclair.....	St-Joseph de Sorel.
St-Louis.....	Azarie Messier.....	St-Louis de Bonsecours.....	J.-Bte St-Amand	St-Louis de Bonsecours.
L'Inm. Concep. de St-Ours.....	Léopold Duhamel.....	St-Ours.....	Louis Morin, fils.....	St-Ours.
St-Marcel	Max. Brizard	St-Marcel de Richelieu.....	P. L. Gaumond	St-Marcel de Richelieu.
St-Pierre de Sorel.....	Séraphin Guévremant.....	Sorel.....	Honore Chapdelaine.....	Sorel.
St-Robert.....	Rev. O. Leduc.....	St-Robert.....	Jos P. Paquin.....	St-Robert.
St-Roch de Richelieu.....	Jos. Giard.....	St-Roch de Richelieu.....	J. B. Paquet.....	St-Roch de Richelieu.
Ste-Victoire	Alcime Marchand.....	Ste-Victore	Rev. J. Beaudry.....	Ste-Victoire.

RICHMOND

Agricultural Society.....	Wiber Gallup.....	Danville	E. C. Atkinson	Melbourne.
Farmers' Clubs				
Parishes of				
St-Frs-Xavier de Brompton ..	Adéard Pouliot	St-Frs-X. de Brompton.....	Joseph Salois.....	St-Frs-X. de Brompton.
St-George de Windsor.....	Pierre Roy	St-George de Windsor	Emilien Raher	St-George de Windsor.
Municipality of				
St-Praxède de Brompton.....	Henri Giroux.....	Brompton Falls.....	Félix G. Ponton.....	Brompton Falls.

RIMOUSKI

Agricultural Society, Div. A..... Farmers' Clubs Township of	Aug. Lavoie.....	Ste-Luce.....	D. Bégin.....	Rimouski.
	Causapcal.....	Causapcal.....	V. O. Morrisette.....	Causapscal.
	Municipalities of			
Dalbaine and Romieu..... McNider..... Tessier.....	Rev. F. X. Dumais..... Rev. L. Rouleau..... Jos Lebreux.....	Dalbaine..... McNider..... St-Luc de Matane.....	Eug. Verreault..... Zépli, Lanouette..... Alexis Dumas.....	Dalbaine. McNider. St-Luc de Matane.
Parishes of	St-Anaclet de Lessard..... St-Benoit Joseph Labre..... St-Blandine..... St-Damase..... St-Donat..... St-Félicité..... St-Flavie de Lepage..... St-Gabriel..... St-Germain de Rimouski..... St-Jérôme de Matane..... St-Moise de Lessard..... St-Pierre du Lac..... St-Ulric de Matane.....	St-Anaclet..... Amqui..... Ste-Blandine..... St-Damase de Rimouski..... St-Donat..... St-Félicité..... St-Flavie..... Fleuriau..... Rimouski..... Matane..... Ste-Luce..... St-Moise..... Cedar Hall..... Tessierville.....	V. St-Laurent..... Louis A. Pouliot..... Jos. Lévesque..... Phil. Boucher..... Frs. Desgagnés..... J. A. Derooy..... Pierre Dastous..... Rev. Jos. A. Leblanc..... Sam. Côté..... J. E. Gagnon..... Pierre Langis..... Rev. A. Belles Isles..... L. S. Couture..... François Pelletier.....	St-Anaclet. Amqui. Ste-Blandine. St-Damase de Rimouski. St-Donat. St-Félicité. St-Flavie. St-Gabriel. Rimouski. Matane. Ste-Luce. St-Moise. Cedar Hall. Tessierville.
Agricultural Society, Div. B..... Farmers' Clubs				
Parishes of	St-Océile du Bic..... St-Pierre..... St-Mathieu de Biéva..... N.-D. du Sacre Coeur..... St-Valérien.....	Bic..... St-Fabien..... St-Mathieu..... N.-D. de Rimouski..... St-Valérien de Rimouski.....	Isaac Lévesque..... Ls. Jos. Côté..... Ez. Lévesque..... J. E. Parent..... Joseph Thériault.....	Bic. St-Fabien. St-Mathieu. N. D. de Rimouski. St-Valérien de Rimouski.

AGRICULTURAL SOCIETIES AND FARMERS' CLUBS IN THE PROVINCE OF QUEBEC, 1900.—*Continued.*

ROUVILLE

SOCIETIES—CLUBS	PRESIDENTS	POST OFFICE ADDRESS	SECRETARIES	POST OFFICE ADDRESS
Agricultural Society.....	Charles Meunier	St-Césaire	C. N. Frégeau	Marieville.
Farmers' Clubs				
Parishes of				
Notre-Dame de Bonsecours ..	Ludger Bessette.....	Village Richelieu.....	Aug. Johnson	Village Richelieu.
St-Ange-Gardien	Louis Barré	Ange-Gardien de Rouville.	Joseph Fournier.....	Ange Gardien de Rouville.
St-Angèle.....	Jos. Girard	St-Angèle	Isaac Fournier.....	St-Angèle.
St-Césaire	Nap. Arès.....	St-Césaire	Chs Meunier.....	St-Césaire.
St-Hilaire	Louis Hamel	St-Hilaire	J. E. M. Desrochers	St-Hilaire.
St-Jean-Baptiste de Rouville..	Rev. F. X. Jeannotte.....	St-Jean-Bte de Rouville.....	A. Collette	St-Jean-Bte de Rouville.
St-Marie de Monnoir	Jos. Martel	Marieville	Nap. Préfontaine.....	Marieville.
St-Michel de Rougemont.....	Rev. E. Filiatrault.....	Rougemont	Alexis Dame.....	Rougemont.

SAGUENAY

Farmers' Clubs				
Municipalities of				
Township of Bergeronnes.....	Rev. Art. Guay	Bon Désir	Elzéar Simard	Bon Désir.
Township of Tadousac.....	Rev. M. Tremblay.....	Sacré-Cœur	Eug. Caron	Tadousac.
Les Escoumains.....	O. Bergeron.....	Escoumains.....	Rev. Ed. Boily.....	Escoumains.
Parishes of				
Mission of Magpie	Sylvestre Huard	Magpie	Chs. Poirier	Magpie.
St-Paul de Mille Vaches.....	Jos. Levasseur	Mille Vaches.....	Rev. Jos. O. Perron.....	Baye de Bacon.

SHEFFORD

Agricultural Society	A. A. Sargeant.....	Eastman, Co. Brome	N. O. Rockwell.....	Waterloo.
	Farmers' Clubs.			
Municipalities of				
Ely.....	Joseph Gravel.....	Valcourt.....	Moïse Jauron	Valcourt.
Roxton Falls.....	Joseph Auclair.....	Roxton Falls.....	F.-X. Racine.....	Roxton Falls.
Stukely North.....	Chs. Dubois.....	Lawrenceville.....	J. M. Bourgeois.....	Lawrenceville.
St-Valérien de Milton.....	Jos. Goyette.....	St-Valérien.....	Trefflé Messier	St-Valérien.
Waterloo.....	Alex. Aird.....	Frost Village.....	Pierre Hubert.....	Waterloo.
Parishes of				
St-Alphonse.....	Eug. Côté.....	St-Alphonse de Granby.....	Eug. E. Forgues.....	St-Alphonse de Granby.
Ste-Cécile de Milton.....	Frs. Dupaul.....	Milton-East.....	Fred. D. Parizeau.....	Milton-East.
St-Joachim de Shefford	Agapit Bélanger.....	St-Joachim de Shefford.....	Frédéric Brodeur.....	St. Joachim.
N.-D. de E. de Stukely.....	Rev'd L. Deschamps.....	North Stukely.....	Prudent Sénécal.....	North Stukely.

SHERBROKE

Agricultural Society	William Morris	Sherbrooke	W. M. Tomlinson.....	Sherbrooke.
	Farmers' Clubs.			
Municipalities of				
Arundel	Jos. Allard.....	Sherbrooke-East.....	P. Therrien.....	Sherbrooke-East.
Orford	John Messier.....	Glen Iver	John Vallière	Glen Iver.
Parish of				
St-Roch d'Orford.....	V. de Guillebon.....	Rock Forest	C. Eugène Pelletier.....	Rock Forest.

AGRICULTURAL SOCIETIES AND FARMERS' CLUBS IN THE PROVINCE OF QUEBEC, 1900.—*Continued*
SOULANGES

SOCIETIES—CLUBS	PRESIDENTS	POST-OFFICE ADDRESS	SECRETARIES	POST-OFFICE ADDRESS
Agricultural Society.	Nap. St-Amour	Côteau du Lac	Geo. R. Vernier	Côteau du Lac.
Farmers' Clubs.				
Parishes of				
St-Clet	Louis Leduc	St-Clet	Adrien Rouleau	St-Clet.
St-Ignace du Côteau du Lac.	O. S. Bissonnette.	Côteau du Lac	Albert Dauth	Côteau du Lac.
St-Joseph de Soulanges.	Damase Bertrand	Cèdres	A. M. Bissonnette.	Cèdres.
St-Polycarpe	Télesphore André	St-Polycarpe	J. H. L. Leclair	St-Polycarpe.
St-Télesphore	André Elie	St-Télesphore	J. H. Gareau	St-Télesphore.
St-Zotique	A. Z. Lalonde	Riv. Beaudette	Horace Filiatrault	Riv. Beaudette.
STANSTEAD				
Agricultural Society.	J. J. Sutton	Barnston	Geo. Robinson	Ayer's Flat.
Farmers' Clubs.				
Municipalities of				
Barnston	W. J. Chamberlain	Way's Mills	C. W. Libby	Libbystown.
Barford	Paul Choquette	St-Herménégilde	L. C. Dupuis	St-Herménégilde.
Coaticook town.	Léon Trudeau	Coaticook	Chs. U. Desautels	Coaticook.
Hadley	Joseph Douillard	Katervale	Henri Leblanc	Katervale.

ST-HYACINTHE

Agricultural Society	Etienne Farreau	St-Damase	J. N. Lemieux	St-Hyacinthe.
Farmers' Clubs.				
Parishes of				
N-D. de St-Hyacinthe	Chs. Péloquin	St-Hyacinthe	Elz. Chabot	St-Hyacinthe.
Présentation	Frs. Chapdelaine	La Présentation	Arthur Michon	La Présentation.
St-Barnabé	Alexis Bernier	St-Barnabé	Sam. Girard	St-Barnabé.
St-Charles	Révd J. S. Taupier	St-Charles riv. Richelieu	N. Archambault	St-Charles riv. Richelieu.
St-Denis	Misael Larue	St-Denis	Ephrem Chaput	St-Denis.
St-Damase	Etienne Tetreault	St-Damase	Z. T. Marchessault	St-Damase.
St-Hyacinthe le Confesseur	F. Bergeron	St-Hyacinthe	Victor Côté	St-Hyacinthe.
St-Judes	Stanislas Lafrenaye	St-Judes	L. A. L'Heureux	St-Judes.
Ste-Marie Madeleine	Alexis Blanchette	Ste-Madeleine	Révd V. Chartier	Ste-Madeleine.
St-Thomas	Révd L. A. Sénécal	St-Thomas d'Aquin	Nap. Bienvenu	St-Thomas d'Aquin.

ST-JOHN

Agricultural Society	James O'Caïn	St-John	A. N. Déland	St-John.
Farmers' Clubs.				
Parishes of				
St-Blaise	L. S. Perrier	St-Blaise	Alfred Z. Roy	St-Blaise.
St-John	Ephrem Moreau	St-John	A. N. Déland	St-John.
Ste-Marguerite de Beaufré	Jos. Déland	L'Acadie	Frs. Liénard	L'Acadie.
St-Paul de l'Île aux Noix	Philippe Cloutier	Île aux Noix	Louis St-Hilaire	Île aux Noix.
St-Valentin	Ernest Bouchard	Stottville	Joseph Bouchard	St-Valentin.

AGRICULTURAL SOCIETIES AND FARMERS' CLUBS IN THE PROVINCE OF QUEBEC, 1900.—*Continued.*

ST-AURICE

SOCIETIES—CLUBS	PRESIDENTS	POST OFFICE ADDRESS	SECRETARIES	POST OFFICE ADDRESS
Agricultural Society.....	Michel Bourrassa	St-Barnabé.....	E. Bellemar.....	St-Barnabé
Farmers' Clubs.				
Parishes of				
Ste-Anne d'Yamachiche.....	E. G. Lajoie.....	Yamachiche.....	Nap. Pellerin.....	Yamachiche.
St-Barnabé.....	Arth. Bald.....	St-Barnabé.....	L. O. Bournival M.D.....	St-Barnabé.
St-Boniface de Shawenegan.....	Revd. J. T. Gravel.....	Shawenegan.....	Jos. Carle.....	Shawenegan.
St-Elie de Caxton.....	Revd. A. P. Lamy.....	St-Elie.....	Victor Vincent.....	St-Elie.
St-Etienne des Grès.....	Revd. J. P. Garceau.....	St-Etienne des Grès.....	J. E. Lemire.....	St-Etienne des Grès.
St-Flore.....	Revd. F. Verville.....	St-Flore.....	Naz. Deschênes.....	St-Flore.
St-Sévère.....	Pierre Héroux.....	St-Sévère.....	Fucher Lamy.....	St-Sévère.
Visitation de la Pointe du Lac	Revd. Jos. Caron.....	Pointe du Lac.....	J. O. Dugré.....	Pointe du Lac.

TEMISCOUATA

Agricultural Society.....	J. Elz. Pouliot.....	Fraserville.....	S. C. Rioux.....	Fraserville.
Farmers' Clubs.				
Municipalities of				
Begon.....	Revd. Jos. Onellet.....	St-Jean de Dieu.....	Arsène Dumont.....	St-Jean de Dieu.
Hocquart.....	Jos. Lebel.....	St-Cyprien.....	Alp. Onellet.....	St-Cyprien.
Viger.....	Revd. A. D. Jobin.....	St-Ephémère.....	Frs. Desbiens.....	St-Ephémère.
Whitworth.....	Edouard Couillard.....	St-Modeste.....	P. A. Gamache.....	St-Modeste.
Parishes of				
Notre-Dame du Lac.....	Revd. P. Moreau.....	Notre-Dame du Lac.....	Emile Dumond.....	Notre-Dame du Lac.
N.-D. des Neiges des T Pistol	Revd. D. Morrissette.....	Trois Pistoles.....	J. A. Lavigne.....	Trois-Pistoles.
N.-D. du Portage.....	Louis Léveillé.....	Notre-Dame du Portage.....	Ed. Michaud.....	Notre-Dame du Portage
St-Antoine.....	Délim Massé.....	St-Antoine.....	Pierre April.....	Green River.
St-Arsène.....	J. A. Saindon.....	St-Arsène.....	Naz. Lebel.....	St-Arsène.
St-Clément.....	Revd. L. C. H. Tremblay.....	St-Clément.....	Marcelin April.....	St-Clément.

St-Eloi.....	Jacques Theriault.....	St-Eloi.....	Isidore Albert.....	St-Eloi.....
St-François.....	Théop. Hudon.....	St-François.....	Rev. Jos. Ant. Ouellet.....	St-François.....
St-Georges de Cacouna.....	Pierre Landry.....	Cacouna.....	Ed. Beaulieu.....	Cacouna.....
St-Honoré.....	François Caron.....	Arnaud.....	Joseph Lebel.....	Arnaud.....
St-Jean-Bte de l'Île Verte.....	Alphée Côté.....	Île Verte.....	J. E. Dubé.....	Île Verte.....
St-Louis du Ha! Ha!.....	Rev. A. P. Bérubé.....	St-Louis du Ha! Ha!.....	P. H. Feltier.....	St-Louis du Ha! Ha!.....
St-Patrice de la riv. du Loup.....	J. E. Pouliot.....	Rivière du Loup (en bas).....	Magloire Deschênes.....	Rivière du Loup (en bas).....
St-Paul de la Croix.....	Edouard Côté.....	St-Paul de la Croix.....	David Garon.....	St-Paul de la Croix.....
St-Rose du Dégelé.....	Rev. A. Thibault.....	St-Rose du Dégelé.....	Joseph Desrosiers.....	St-Rose du Dégelé.....

TERREBONNE

Agricultural Society No 1.....	Louis Labelle.....	St-Jérôme.....	F. Villeneuve.....	St-Aune des Plaines.....
Farmers' Clubs,				
Parishes of				
St-Anne des Plaines.....	Jean Lévêillé.....	St-Anne des Plaines.....	F. Villeneuve.....	St-Anne des Plaines.....
St-Janvier de Blainville.....	Joseph F. Forget.....	St-Janvier.....	J. Desrosches.....	St-Janvier.....
St-Jérôme Rivière du Nord.....	Frs. Lorrain.....	St-Jérôme.....	Jos. E. Parent, N. P.....	St-Jérôme.....
St-Louis de Terrebonne.....	Ovide Valiquet.....	Terrebonne.....	J. H. Limoges.....	Terrebonne.....
St-Sophie de Lacorne.....	Geo McCubbin.....	New Glasgow.....	Peter Stormont.....	St-Sophie de Lacorne.....
St-Thérèse de Blainville.....	Ant. Desjardins.....	St-Thérèse.....	D. Desrosches.....	St-Thérèse.....
Agricultural Society No 2.....	Rev. A. G. Moreau.....	Lac Masson.....	Dr. W. Grignon.....	St-Adèle.....
Farmers' Clubs,				
Municipalities of				
Attercliffe.....	J. E. Lacasse.....	St-Hippolyte.....	Emile Dagenais.....	St-Hippolyte.....
Doncaster.....	Rev. Jos. Chontier.....	St-Luce de Doncaster.....	Léopold André.....	St-Luce de Doncaster.....
Salisbury and Grandison.....	Joseph Léonard.....	St-Jovite.....	Wilfrid Lapointe.....	St-Jovite.....
Parishes of				
St-Agathe.....	Odéline Renaud.....	St-Agathe des Monts.....	Dr. Edm. Grignon.....	St-Agathe des Monts.....
St-Adèle.....	Jaruel Labelle.....	St-Adèle.....	Dr. W. Grignon.....	St-Adèle.....
St-Marguerite, Lac Masson.....	Rev. A. G. Moreau.....	Lac Masson.....	Francine D. Chartier.....	Lac Masson.....

AGRICULTURAL SOCIETIES AND FARMERS' CLUBS IN THE PROVINCE OF QUEBEC, 1900. — *Continued.*

THREE-RIVERS

SOCIETIES—CLUBS	PRESIDENTS	POST OFFICE ADDRESS	SECRETAIRES	POST OFFICE ADDRESS
Agricultural Society.....	E. O. Duval	Three-Rivers.....	Alph. Duval.....	Ste-Marguerite.
Farmers' Club				
Parish of				
N.-Dame des Trois-Rivières...	Narcisse Cloutier.....	Th. Rivers (Ste-Marguerite)	Th. Beaudry.....	T. Rivers Ste Marguerite

VAUDREUIL

Agricultural Society.....	Dr H. Pilon.....	Vaudreuil.....	Jos. Denis.....	Vaudreuil.
Farmers' Clubs.				
Municipality of				
Newton	Rev'd. O. Dufault.....	Ste-Justine de Newton.....	Fabien Lortie.....	Ste-Justine de Newton.
Parishes of				
Ste-Madeleine de Rigaud.....	Benj. Villeneuve.....	Rigaud.....	Jos. Lafleur.....	Rigaud.
Ste-Marthe	Placide Sabourin.....	Ste-Marthe ..	Adhémar Jeannotte.....	Ste-Marthe.
Très St-Rédempteur.....	Théodule Aubry	St-Rédempteur.....	Naz. Aubry	Mount Osear.

VERCHÈRES

Agricultural Society	L. A. Bousquet.....	Varennes.....	J. H. Gervais	St-Marc.
Farmers' Clubs.				
Parishes of				
St-Antoine	Olivier Gaudette.....	St-Antoine	J. H. Archambault.....	St-Antoine.
St-Frs-Xavier de Verchères...	Revd Ad. Bérrud	Verchères	F. C. Larose.....	Verchères.
St-Julie.....	Revd J. G. Daigneault.....	St-Julie.....	N. P. Lapierre.....	St-Julie.
St-Marc de Courtoyer	Flavien Larue	St-Marc	Chs. Blanchard.....	St-Marc.
St-Théodose	Revd J. L. Perreault.....	St-Théodose	Isaie Perreault.....	St-Théodose.
St-Trinité de Contrecoeur.....	J. E. Lamoureux.....	Contrecoeur	J. B. Dupuy, N. P.....	Contrecoeur.

WOLFE

Agricultural Society No. 1.....	E. J. Westman	Marbleton	J. Cunningham.....	Bishop's Crossing.
Farmers' Clubs.				
Municipalities of				
Dudman H	Albert Chester	Marbleton	E. J. Westman	Marbleton.
Ham South West.....	Jos. Boisvert.....	St-Adrien	J. G. Brochu	St-Adrien.
Ham North	Alfred Lacombe.....	Ham North	Patrice Blais	Ham-North.
D'Iraceli	Revd J. A. Hamel.....	D'Iraceli	Hip. Castonguay.....	D'Iraceli.
Lake Weedon	Stan. Gosselin	Lake Weedon	Adolphe Lussier.....	Lake Weedon.
St-Aylmer	Revd J. E. Simard.....	Lake Aylmer	Gedon Héon.....	Lake Aylmer.
Woolton	Og. Hamel	Woolton Centre	Pierre Després	Woolton Centre.
Wolfsburg	Cléophas Boulanger	Belton	Romain Boulanger.....	Wolfsburg.
Parishes of				
X 10 de Loupelt Ham-North...	Pierre Belair	Fecteau's Mills.....	Arthur Fiteau	Fecteau's Mills.
St-Fortunat de Wolfestown...	Johnny Cooke.....	St-Fortunat	Lac Gosselin	St-Fortunat.
Agricultural Society No. 2	Edna Heli	Wotton	J. H. Crépeau.....	St-Camille.
Farmers' Clubs.				
Parishes of				
St-Camille	G. O. Proulx.....	St-Camille.....	Dr A. Thibault.....	St-Camille.
St-Joseph Ham-South.....	J. A. Filiault.....	Ham South.....	Onésime Dion.....	Ham South.
Municipality of				
Wotton	Oscar Vandrié	Wotton	P. J. O'Bready	Wotton.

AGRICULTURAL SOCIETIES AND FARMERS' CLUBS IN THE PROVINCE OF QUEBEC, 1900.—Continued.

YAMASKA

SOCIETIES--CLUBS	PRESIDENTS	POST OFFICE ADDRESS	SECRETARIES	POST OFFICE ADDRESS
Agricultural Society.....	Félix Gouin.....	St-Thomas de Pierreville....	A. O. Camiré, M. D.....	St-François du Lac.
Farmers' Clubs.				
Parishes of				
Notre-Dame de Pierreville....	Jos. Bernier	Pierreville Mills	Ida Niquette	Pierreville Mills.
St-Antoine la Baie du Felyre	J. L. Lemire	La Baie	J. L. Belcourt	La Baie
St-Bonaventure d'Upton	H. Forest	St-Bonaventure d'Upton....	Ernest Lemaire	St-Bonaventure d'Upton.
St-David	Victor Chamberland	St-David de Yamaska....	L. W. Joyal, M. D.	St-David de Yamaska.
St-Elphège	Victor Caron	St-Elphège	Wm. Parent	St-Elphège.
St-Guillaume d'Upton	J. B. Morvan	St-Guillaume d'Upton....	E. Sylvestre	St-Guillaume d'Upton.
St-Michel d'Yamaska....	Jérémie Cartier.....	Yamaska	Emile Parenteau	Yamaska.
St-Pie de Guire,	Pierre Brouillard	St-Pie de Guire.....	Jos P. Proulx	St-Pie de Guire.
St-Thomas de Pierreville.....	Honoré Oapistran	Pierreville	A. A. Mondou, N. P.	Pierreville.
St-Zéphirin de Courval.....	Alp. Smith	St-Zéphirin	Noise Lefebvre	St-Zéphirin.

QUEBEC, 25th October 1900.

HON. F. G. M. DECHÈNE,

Commissioner of Agriculture,

Quebec.

Sir,

I have the honor to submit my report on the working of farmers' clubs and agricultural societies during the fiscal year 1899-1900.

I have no special remarks to make in connection with these associations which have given satisfaction as a rule.

During the year the Department of Agriculture distributed chemical and artificial fertilizers amongst a certain number of farmers' clubs in order to try them. According to the programmes of operations submitted to us, experiments have been made in various parts of the province to ascertain the respective values of these fertilizers. The result of these experiments will be published in the next report of the Department of Agriculture.

We have also sent to these various agricultural associations a series of questions on different kinds of farming operations. The answers sent us show that considerable interest is taken in many cases and may be useful in deciding the direction that agricultural operations should take in each region by telling us what kind of farming and what industries should be encouraged in preference to others. Extracts from the answers so given us are printed in the present report.

OCT. OUELLETTE,

Secretary of the Council of Agriculture.

STATEMENT OF RECEIPTS AND EXPENDITURE OF FARMERS'

FARMERS' CLUBS (By counties)		RECEIPTS						
		Number of members	Balance on 31 Dec. 1898	Subscrip- tions	Grant	Sundries	Deficit in 1899	Total
ARGENTEUIL.								
Parish of	St-André d'Argenteuil.....		58 83					58 83
			58 83					58 83
ARTHABASKA.								
Municipality of	Chenier	106	5 47	112 82	50 00	3 18		171 47
	Chester-East.....	114		114 00	50 00			164 00
	Chester-West.....	64	10 00	64 00	32 00			106 00
	Tingwick.....	42		42 00	25 00	18 13		85 13
	Warwick.....	124	20 91	124 00	50 00			194 91
Parish of	St-Albert de Warwick.....	91	7 52	91 00	45 50	12 25		156 27
	St-Christophe d'Arthabaska.....	74	11 17	74 00	37 00			122 17
	St-Clotilde de Horton.....	80		80 00	40 06			120 00
	St-Elizabeth de Warwick.....	97	12 98	97 00	48 50			159 48
	St-Eusèbe de Stanfold.....	56	45 06	56 00	28 00	256 73		385 79
	St-Louis de Blanford.....	65	1 91	65 00	32 50			99 41
	St-Norbert d'Arthabaska.....	97	34 45	97 00	48 50			179 95
	St-Rémi de Tingwick.....	31	0 32	32 00	25 00	8 15		65 47
	St-Rosaire (N.-D. du).....	37	55 11	37 00	37 00			129 11
	St-Valère de Bulstrode.....	32		32 00	25 00	3 00		60 00
	Ste-Victoire d'Arthabaska.....	100	39 99	100 00	50 00			189 99
		1210	244 89	1217 82	624 00	301 44		2388 15
BAGOT.								
Parish of	St-André d'Acton	48	56 94					56 94
	Ste-Christine.....	37	2 99	38 00	25 00	7 66		73 65
	St-Dominique.....		136 50				2 50	139 00
	St-Ephrem d'Upton.....	126		153 50	50 00			203 50
	Ste-Hélène.....	101	12 33	108 00	50 00			170 33
	St-Hugues	114	7 25	139 00	50 00			196 25
	St-Liboire		5 12					5 12
	St-Nazaire.....	50		50 00	25 00	5 00		80 00
	St-Pie.....	66	31 50	66 00	33 00	1 77		132 27
	Ste-Rosalie.....	100	31 00	109 00	50 00			190 09
	St-Simon	100		100 00	50 00			150 06
	St-Théodore.....	47	37 47	47 00	25 00	10 00		119 47
		789	321 10	810 50	358 00	24 43	2 50	1516 53

CLUBS FOR THE YEAR ENDING THE 31st DECEMBER 1899

EXPENDITURE

Deficit in 1898	Prizes at- competi- tions	Purchase of imple- ments	Purchase of stock	Other purchases	Sundries	Cost of manage- ment	Balance on 31 Dec. 1899	Total	REMARKS
.....	.....	.....	.....	.....	.....	.....	58 83	58 83	No longer in operat.
.....	.....	.....	.....	.....	.....	.....	58 83	58 83	
.....	30 00	.....	.....	116 00	5 00	7 87	12 60	171 47	
.....	.....	24 00	26 00	101 40	.....	12 60	.....	164 00	
.....	.....	.....	42 00	64 00	.....	.....	.....	106 00	
19 74	.....	16 40	.....	42 00	1 36	5 63	.....	85 13	
.....	30 60	25 00	.....	115 32	6 05	12 39	5 55	194 91	
.....	20 00	.....	20 50	91 00	8 47	2 90	13 40	156 27	
.....	29 50	.....	.....	77 31	5 00	2 42	7 94	122 17	
.....	40 00	.....	.....	75 50	.....	4 50	.....	120 00	
.....	.....	25 00	.....	97 00	.....	2 35	34 13	158 48	
.....	.....	.....	15 00	314 30	0 50	8 00	47 99	385 79	
.....	10 00	21 00	.....	65 00	2 10	.....	1 31	99 41	
.....	.....	.....	50 50	97 02	0 32	5 90	26 21	179 95	
.....	15 06	8 00	.....	29 76	3 00	4 86	4 79	65 47	
.....	.....	28 50	.....	25 00	1 50	6 00	68 11	129 11	
0 95	25 75	.....	.....	25 60	2 00	3 97	1 73	60 00	
.....	30 00	14 00	.....	100 00	13 00	7 00	25 99	189 99	
20 69	230 91	161 90	154 00	1436 21	48 30	86 39	249 75	2368 15	
.....	.....	.....	.....	.....	.....	.....	56 94	56 94	No longer in operat.
.....	25 25	.....	.....	42 67	.....	4 94	0 79	73 65	
.....	46 00	.....	.....	82 00	2 00	9 00	.....	139 00	Expenses of 1898-99.
.....	44 00	.....	.....	153 50	.....	6 00	.....	204 50	
.....	11 00	24 00	.....	108 00	7 75	3 00	16 38	159 23	
.....	42 50	.....	.....	139 00	9 14	5 61	.....	196 24	
.....	.....	.....	.....	.....	.....	.....	5 12	5 12	No longer in operat.
.....	.....	.....	30 00	50 00	.....	.....	.....	80 00	
.....	38 00	.....	.....	67 77	.....	.....	26 50	132 27	
.....	53 00	.....	.....	109 00	.....	5 00	23 00	196 00	
.....	50 00	.....	.....	100 00	.....	.....	.....	150 00	
.....	55 00	.....	.....	43 71	.....	7 42	13 34	119 47	
.....	364 75	24 00	30 00	895 65	18 89	40 97	142 27	1516 53	

STATEMENT OF RECEIPTS AND EXPENDITURE OF FARMERS'

FARMERS' CLUBS (By counties)		RECEIPTS						Total
		Number of members	Balance on 31 Dec. 1898	Subscrip- tions	Grant	Sundries	Deficit in 1899	
BRAUCE								
Municipality of 								

CLUBS FOR THE YEAR ENDING THE 31st DECEMBER 1899

EXPENDITURE

Deficit in 1898	Prizes at competi- tions	Purchase of imple- ments	Purchase of stock	Other purchases	Sundries	Cost of manage- ment	Balance on 31 Dec. 1899	Total	REMARKS
.....	18 00	8 50	17 90	194 69	1 00	42 79	53 92	336 80	
10 00	51 50	.....	.....	250 67	.....	50 85	.....	363 02	
.....	.....	17 50	.....	208 75	5 00	39 00	18 11	288 32	
.....	.....	.....	20 50	243 14	0 98	22 40	3 26	290 28	
.....	.....	30 00	.....	102 47	.....	9 37	13 25	155 09	
.....	.....	36 34	64 55	665 37	1 25	18 24	47 74	833 99	
.....	.....	.....	.....	.....	.....	.....	94 38	95 38	No longer in operat.
.....	41 00	9 00	.....	157 17	5 00	11 83	55 74	279 74	
.....	.....	.....	18 00	.....	0 25	0 36	37 39	56 00	
.....	.....	51 00	.....	67 29	.....	8 83	3 63	130 75	
.....	.....	.....	.....	153 00	.....	9 46	26 04	188 50	
26 00	.....	.....	.....	405 80	2 00	7 84	22 00	463 64	
.....	30 00	.....	31 15	281 11	.....	23 00	2 86	368 12	
.....	.....	.....	.....	.....	.....	.....	222 45	222 45	No report.
.....	20 75	.....	.....	173 40	.....	20 00	27 40	241 55	
4 42	.....	23 50	.....	83 00	.....	8 68	4 90	124 50	
.....	52 40	.....	.....	101 30	.....	14 09	3 94	171 73	
.....	18 00	.....	.....	87 28	2 00	2 72	30 00	140 00	
.....	.....	.....	.....	119 00	.....	.....	50 00	169 00	
.....	.....	28 00	20 00	134 00	.....	.....	7 34	189 34	
0 70	.....	.....	.....	.....	.....	.....	0 70	.....	No longer in operat.
.....	.....	.....	.....	48 60	.....	5 46	47 28	101 34	
.....	.....	.....	.....	.....	.....	.....	53 80	53 80	No longer in operat.
41 12	231 65	204 34	172 10	3476 04	17 48	294 92	825 43	5263 08	
.....	.....	.....	61 50	19 05	.....	15 00	4 35	99 90	
.....	.....	60 00	3 00	.....	.....	8 69	1 40	73 09	
4 52	.....	50 00	.....	.....	0 20	11 00	.....	65 72	
.....	62 09	.....	24 00	.....	4 00	10 95	41 10	142 05	
4 52	62 00	110 00	88 50	19 05	4 20	45 64	46 85	380 76	
.....	
.....	24 67	.....	30 00	101 91	.....	11 40	.....	167 98	
.....	.....	.....	25 00	44 07	.....	3 45	18 40	90 92	
.....	29 50	.....	.....	74 40	3 50	18 22	28 05	153 67	
.....	.....	60 00	6 00	39 05	9 80	5 28	0 96	121 09	
.....	.....	.....	.....	.....	.....	.....	26 46	26 46	No longer in operat.
.....	23 00	.....	.....	51 99	6 20	10 11	8 58	99 88	
.....	.....	.....	82 50	66 37	.....	3 36	.....	152 23	
.....	.....	.....	35 90	40 00	3 50	1 50	204 33	285 28	
.....	23 50	.....	.....	52 20	11 04	6 04	5 21	97 99	
.....	.....	.....	27 78	39 50	.....	4 72	26 00	98 00	
.....	.....	.....	34 25	31 27	2 67	4 76	1 20	74 15	
12 26	.....	.....	.....	.....	.....	.....	.....	12 26	No longer in operat.
.....	.....	25 00	18 00	138 00	.....	12 46	.....	198 46	
12 26	100 67	85 00	259 43	678 76	36 71	81 30	319 19	1573 32	

STATEMENT OF RECEIPTS AND EXPENDITURE OF FARMERS'

FARMERS' CLUBS (By counties)		RECEIPTS						
		Number of members	Balance on 31 Dec. 1898	Subscrip- tions	Grant	Sundries	Deficit in 1899	Total
BERTHIER.								
Municipality of Provost.....	31	2 20	31 00	25 00	2 75	.....	60 95
Parishes of St-Antoine de Lavaltrie.....	55	.....	85 50	27 50	.....	.....	113 00
St-Barthélemy de Dusablé.....	155	61 25	155 00	50 00	3 00	.....	269 25
St-Cuthbert.....	45	33 14	45 17	25 00	3 00	.....	106 31
St-Damien de Brandon.....	111	2 97	143 00	50 00	119 33	.....	315 30
St-Gabriel de Brandon.....	87	5 14	102 00	43 50	15 58	.....	166 22
Ste-Genève de Berthier.....	105	.....	105 00	50 00	16 90	.....	171 90
St-Joseph de Lanoraie.....	.....	70 30	.....	.....	.....	.....	70 30
St-Michel des Saints.....	80	.....	80 00	40 00	.....	2 40	122 40
St-Norbert.....	103	3 18	103 00	50 00	18 50	.....	174 68
Visitation de L'Ile du Pads.....	38	25 70	38 00	25 00	.....	.....	88 70
	810	203 88	887 67	386 00	179 06	2 40	1659 01	
BONAVENTURE.								
Municipalities of Carleton.....	57	4 57	85 75	28 50	.....	.....	118 82
Maria.....	95	18 78	122 00	47 50	131 46	.....	319 74
Matapédia.....	94	.....	94 00	47 00	496 21	.....	637 21
New-Richmond.....	33	21 97	36 00	25 00	.....	.....	82 97
Port Daniel-East.....	84	46 06	84 00	42 00	.....	.....	172 06
Shoolbred.....	78	.....	82 00	39 00	.....	.....	121 00
Parishes of N.-D. de Paspébiac.....	25	91 38	30 00	25 00	.....	.....	146 38
St-Bonaventure.....	.....	20 50	.....	.....	.....	.....	20 50
St-Charles de Caplan.....	57	42 22	59 95	28 50	1 45	.....	132 12
	523	245 48	593 70	282 50	629 12	.....	1750 80
BROME.								
Municipalities of Bolton-East.....	.....	35 29	.....	.....	.....	.....	35 29
Eastman.....	32	1 89	32 00	25 00	148 10	.....	206 99
Farnham-East.....	45	1 66	45 00	25 00	11 25	.....	82 91
Village of Knowlton.....	.....	.....	.....	.....	.....	501 22	501 22
	77	38 84	77 00	50 00	159 35	501 22	826 41	
CHAMBLY.								
Parishes of St-Antoine de Longueuil.....	25	.....	25 00	25 00	0 31	.....	50 31
St-Basile le Grand.....	79	22 21	97 00	39 50	.....	.....	158 71
St-Bruno de Montarville.....	50	215 79	242 94	25 00	.....	114 26	597 99
Ste-Famille de Boucherville.....	114	.....	214 00	50 00	10 00	.....	274 00
St-Hubert.....	63	.....	100 00	31 50	20 90	38 07	190 47
St-Joseph de Chambly.....	102	12 33	102 00	50 00	315 63	.....	479 96
	433	250 33	780 94	221 00	346 84	152 33	1751 44	

CLUBS FOR THE YEAR ENDING THE 31ST DECEMBER 1899

EXPENDITURE

Deficit in 1898	Prizes at competi- tions	Purchase of imple- ments	Purchase of stock	Other purchases	Sundries	Cost of manage- ment	Balance on 31 Dec. 1899	Total	REMARKS
	25 00	4 00		31 00		0 75	0 20	60 95	
1 96				83 40		2 10	25 54	113 00	
	82 00			154 80		4 00	28 45	269 25	
	52 50			40 00	3 73	16 08		105 31	
		50 00		180 04	50 25	22 00	13 01	315 30	
	43 10			100 00	13 91	9 21		166 22	
3 52	45 50			105 00	0 80	9 10	7 98	171 90	
							70 30	70 30	No larger in operat.
2 35			38 00	80 00	0 15	1 90		122 40	
		19 65	33 70	103 00		3 18	15 15	174 68	
	10 00		14 65	38 00	5 00		21 05	88 70	
7 83	258 10	73 65	86 35	915 24	73 84	62 32	181 68	1659 01	
			26 75	79 82		8 25	4 00	118 82	
	17 00		14 70	223 85	12 85	14 40	36 94	319 74	
23 78	118 04			444 05	14 52	31 14	5 68	637 21	
				33 00		3 00	46 97	82 97	
				84 00		23 17	64 89	172 06	
				76 37		5 35	39 28	121 00	
		83 00		30 00		7 91	25 47	146 38	
							20 50	20 50	No larger in operat
	35 50			52 05	7 96	3 50	33 11	132 12	now St Alphonse of
23 78	170 54	83 00	41 45	1023 14	35 33	96 72	276 84	1750 80	
							35 29	35 29	No larger in operat.
	21 20			175 23	2 50	8 06		206 99	
	29 40			38 58	5 00	9 93		82 91	
501 22								501 22	No larger in operat.
501 22	50 00			213 81	7 50	17 99	35 29	826 41	
3 78				16 95	12 50	0 78	16 30	50 31	
				97 00	20 00		41 71	158 71	
		49 05		504 94	37 50	6 50		597 99	Expenses of 1898-99.
11 73	15 00			214 00	25 00	7 00	1 27	274 00	
44 00				120 90	18 39	7 18		190 47	
	16 00			417 63	25 00	1 12	20 21	479 96	
59 51	31 00	49 05		1371 42	138 39	22 58	79 49	1751 44	

STATEMENT OF RECEIPTS AND EXPENDITURE OF FARMERS'

FARMERS' CLUBS (By counties)		RECEIPTS						
		Number of members	Balance on 31 Dec. 1898	Subscrip- tions	Grant	Sundries	Deficit in 1899	Total
CHAMPLAIN								
Parish of	N.-D. du Mont-Carmel	68	176 64	68 00	34 00	.....	.....	278 64
	Ste-Anne de la Pêrade	58	11 50	135 50	29 00	10 00	.....	186 00
	St-Frs-Xavier de Batiscan.....	142	75 55	149 00	50 00	.....	.....	274 55
	St-Luc.....	47	.....	47 00	25 00	.....	2 81	74 81
	St-Maurice.....	45	17 90	45 50	25 00	.....	2 25	90 65
	St-Narcisse.....	107	.....	107 00	50 00	.....	.....	157 00
	St-Prosper.....	111	15 07	158 50	50 00	58 62	.....	282 19
	St-Séverin.....	66	18 01	67 00	33 00	.....	.....	118 01
	St-Stanislas.....	51	61 00	68 00	25 50	19 86	.....	174 36
	Ste-Thècle.....	25	17 50	58 00	25 00	203 10	.....	303 60
	St-Théophile du Lac.....	61	.....	74 00	30 50	.....	.....	104 50
	St-Tite.....	237	4 72	466 00	50 00	1089 65	.....	1610 37
	Visitation de Champlain.....	136	.....	233 00	50 00	.....	.....	283 00
		1154	397 89	1676 50	477 00	1381 23	5 06	3937 68
CHARLEVOIX								
Parish of	L'Ass. de N.-D. des Eboulements	68	.....	144 30	34 00	.....	10 23	188 53
	Ste-Agnès.....	124	29 78	125 00	50 00	.....	.....	204 78
	St-Etienne de la Malbaie.....	74	197 21	74 00	37 00	607 22	.....	915 43
	St-Fidèle.....	87	17 65	130 55	43 50	.....	.....	191 70
	St-Hilarion de Settrington.....	107	9 62	233 00	50 00	.....	.....	292 62
	St-Irénée.....	102	11 42	196 00	50 00	13 72	.....	271 14
	St-Louis de L'Île-aux-Coudres....	53	25 84	61 50	26 50	.....	.....	113 84
	St-Pierre, St-Paul de la B. St-Paul	102	0 72	302 66	50 00	.....	.....	353 38
	St-Placide.....	41	40 50	43 00	25 00	.....	0 16	108 66
	St-Siméon.....	28	2 60	30 00	25 00	0 69	.....	58 20
	St-Urbain.....	52	167 65	104 00	.....	.....	.....	271 65
		838	502 99	1444 01	391 00	621 54	10 39	2969 92
CHATAUGUAY								
Parish of	St-Jean Chrysostôme.....	102	.....	102 00	50 00	.....	.....	152 00
	St-Joachim.....	44	.....	44 00	25 00	127 63	5 78	202 41
	Ste-Martine.....	41	9 86	41 00	25 00	39 72	.....	115 58
	Ste-Philomène.....	40	8 29	42 00	25 00	111 00	.....	186 29
	St-Urbain Premier.....	.....	56 19	.....	.....	.....	.....	56 19
		227	74 34	229 00	125 00	278 35	5 78	712 47

CLUBS FOR THE YEAR ENDING THE 31ST DECEMBER 1899

EXPENDITURE

Deficit in 1898	Prizes at competi- tions	Purchase of imple- ments	Purchase of stock	Other purchases	Sundries	Cost of manage- ment	Balance on 31 Dec. 1899	Total	REMARKS
.....	44 05	.....	.....	171 68	.....	27 69	35 22	278 64	
.....	15 00	.....	.....	129 90	12 00	7 60	21 50	186 00	
.....	.....	.....	73 55	149 00	.....	2 00	50 00	274 55	
1 96	17 00	.....	.....	47 00	2 00	6 85	.....	74 81	
.....	16 50	27 00	.....	38 75	1 50	6 90	.....	90 65	
.....	.....	.....	46 40	107 00	.....	3 60	.....	157 00	
.....	39 00	.....	62 00	160 30	0 55	20 04	0 30	282 19	
.....	17 50	26 90	.....	67 00	.....	0 35	6 26	118 01	
.....	18 00	.....	77 60	42 50	4 30	17 61	14 95	174 36	
.....	.....	.....	30 00	261 10	.....	.....	12 50	303 60	
5 77	.....	.....	.....	67 00	.....	15 95	15 78	104 50	
.....	40 00	.....	.....	1555 65	5 00	2 00	6 72	1610 37	
.....	.....	50 00	.....	218 02	.....	14 98	.....	283 00	
7 73	207 05	103 90	288 95	3014 90	25 35	126 57	163 23	3037 48	
1 42	.....	.....	38 93	144 18	.....	4 00	.....	188 53	
.....	5 00	28 00	35 10	125 00	7 03	.....	4 65	204 78	
.....	.....	.....	142 52	627 73	.....	84 89	60 29	915 43	
.....	.....	7 70	.....	122 44	4 11	20 95	36 50	191 70	
.....	33 20	.....	.....	234 36	3 00	20 10	1 96	292 62	
.....	.....	.....	30 50	204 15	0 50	15 86	20 13	271 14	
.....	.....	24 50	.....	61 50	24	1 10	26 50	113 84	
.....	43 00	.....	.....	302 66	3 00	4 60	0 12	353 38	
.....	18 50	.....	47 00	43 16	.....	.....	.....	108 66	
.....	.....	.....	.....	25 75	.....	1 92	30 53	58 20	
.....	2 00	.....	.....	235 00	5 15	29 50	.....	271 65	Expenses of 1898-1899
1 42	101 70	60 20	294 05	2125 93	23 03	182 92	180 68	2969 93	
.....	38 00	.....	.....	94 86	.....	19 14	.....	152 00	
.....	.....	16 50	26 45	149 63	.....	9 83	.....	202 41	
.....	46 50	8 00	.....	20 50	9 35	10 45	20 78	115 58	
.....	9 00	.....	26 25	111 09	1 65	15 59	22 80	186 29	
.....	.....	.....	.....	.....	.....	.....	56 19	56 19	No longer in operat.
.....	93 50	21 50	52 70	375 99	11 00	55 01	99 77	712 47	

STATEMENT OF RECEIPTS AND EXPENDITURE OF FARMERS'

FARMERS' CLUBS (By counties)		RECEIPTS						Total	
		Number of members	Balance on 31 Dec. 1898	Subscrip- tions	Grant	Sundries	Deficit in 1899		
CHICOUTIMI									
Municipality of	Bagotville.....	71	46 67	71 00	35 50	.....	.....	153 17
	Bourget.....	27	.....	31 00	25 00	.....	.....	56 00
	Chicoutimi.....	103	14 25	206 00	50 00	18 87	.....	289 12
	Grande Baie.....	103	50 00	103 00	50 00	.....	.....	203 00
	Kenogami.....	32	113 36	53 75	25 00	.....	.....	192 11
	St-Jean.....	51	77 18	51 00	25 50	2 85	.....	156 53
	Tremblay.....	145	33 53	281 50	50 00	934 57	.....	1299 60
	N. D. De Laterrière.....	131	53 30	131 00	50 00	.....	.....	234 30
	St-Dominique de Jonquières.....	40	25 00	40 00	25 00	689 66	.....	779 66
	St-Fulgence.....	27	4 00	31 00	25 00	406 00	.....	466 00
		730	417 29	999 25	361 00	2051 95	.....	3829 49
COMPTON.									
Municipality of	Auckland.....	74	34 95	74 00	37 00	162 61	5 14	313 70	
	Bury.....	.....	10 58	.....	.....	.....	.....	10 58
	Chesham.....	73	0 82	73 00	36 50	.....	6 79	117 11
	Clifton.....	96	35 57	96 00	43 00	.....	.....	179 57
	Ditton and Clinton.....	42	0 21	42 00	25 00	97 18	.....	164 39
	Emberton.....	88	.....	88 00	44 00	10 00	.....	142 00
	Hampden.....	.....	0 60	.....	.....	.....	.....	0 60
	Hereford.....	73	0 27	73 00	36 50	.....	0 92	110 69
	Marston.....	76	.....	76 00	38 00	78 35	.....	192 35
	Marston-South.....	30	24 53	31 00	25 00	.....	.....	80 53
Parish of	Village of Megantic.....	.....	62 90	.....	.....	.....	.....	62 90
	Village of Waterville.....	32	6 83	32 00	25 00	34 00	.....	97 83
	Westbury.....	.....	53 60	.....	.....	.....	.....	53 60
	Whitton.....	35	20 34	96 89	25 00	5 31	.....	147 54
	Winslow-North.....	102	23 13	102 00	50 00	7 08	.....	182 21
	Winslow-South.....	52	11 00	52 00	26 00	205 25	.....	294 25
	St-Zenon de Piopolis.....	50	.....	50 00	25 00	77 46	.....	152 46
			823	285 33	885 89	441 00	677 24	12 85	2302 31
	TWO MOUNTAINS								
	Parish of	St-Augustin.....	102	13 41	102 00	50 00	165 41
St-Benoit.....		111	.....	118 00	50 00	.....	.....	168 00
St-Canut.....		33	6 31	33 00	25 00	30 00	.....	94 31
St-Hermas.....		88	12 05	88 00	44 00	.....	.....	144 05
St-Joseph du Lac.....		.....	.....	.....	.....	2 85	.....	2 85
St-Monique.....		109	.....	158 00	50 00	.....	.....	208 00
St-Placide.....		.....	4 37	.....	.....	.....	.....	4 37
St-Scholastique.....		77	32 82	77 00	38 50	.....	.....	148 32
		520	68 96	576 00	257 50	30 00	2 85	935 31	

CLUBS FOR THE YEAR ENDING THE 31ST DECEMBER 1899

EXPENDITURE

Deficit in 1895	Prizes at competi- tions	Purchase of imple- ments	Purchase of stock	Other purchases	Sundries	Cost of manage- ment	Balance on 31 Dec. 1899	Total	REMARKS
		9 50	38 55	44 00		19 28	41 84	153 17	
		20 85		31 00		4 15		56 00	
		48 00		206 00	2 75	17 97	14 40	289 12	
		25 00	25 00	103 00		3 50	46 50	203 00	
			12 77	118 75	15 23	7 00	38 56	192 11	Expenses of 1898-1899
	20 00			61 00	3 00	6 00	66 53	156 53	
	10 00			1216 07	3 50	8 85	61 18	1299 00	
		25 50		131 00		6 34	71 46	234 36	
		31 33	26 50	689 66	5 00	25 91	1 26	779 66	
		11 00	10 00	437 00	4 00	2 50	1 50	466 00	
	30 00	171 18	112 82	3037 48	33 48	101 50	343 03	3829 49	
	17 00		58 25	234 11		4 34		313 70	
			30 75		59 30	27 06	10 58	10 58	No longer in operat.
	22 47		41 69	96 00			19 41	179 57	
	24 00		3 00	122 23	3 05	10 81	1 30	164 39	
	25 00			74 53	4 25	9 50	28 72	142 00	
							0 60	0 60	No longer in operat.
			35 00	67 89	0 13	7 67		110 69	
	9 43		77 70		82 25	12 15	10 82	192 35	
			60 00			11 31	9 22	80 53	
							62 90	62 90	No longer in operat.
			25 00	64 00	1 50	2 39	4 94	97 83	
							53 60	53 60	No longer in operat.
	15 75			102 20		7 47	22 12	147 54	
	51 50			81 60	4 00	13 88	31 23	182 21	
			164 00		32 50	0 75	97 00	294 25	
	0 77	15 00		113 87	4 53	0 98	17 31	152 46	
	0 77	164 40	15 75	495 39	956 43	191 51	369 75	2302 31	
	32 50		6 98	102 00	0 24	2 78	20 91	165 41	
	50 00			118 00				168 00	
	20 00			54 81	3 00	8 50	8 00	94 21	
	19 50		25 15	88 00	1 00	3 08	7 32	144 05	
	2 85							2 85	No longer in operat.
	18 00			158 00		2 00	30 00	208 00	
					4 37			4 37	No longer in operat.
			69 00	38 50		4 00	36 82	148 32	
	2 85	140 00	101 13	559 31	8 61	20 36	103 05	935 31	

STATEMENT OF RECEIPTS AND EXPENDITURE OF FARMERS'

FARMERS' CLUBS (By counties)		RECEIPTS						
		Number of members	Balance on 31 Dec 1898	Subscrip- tions	Grant	Sundries	Deficit in 1899	Total
DORCHESTER.								
Parish of	St-Anselme	108	25 19	108 00	50 00	8 46	.....	191 65
	St-Bernard	144	14 50	186 00	50 00	19 45	38 50	308 45
	Ste-Claire	115	.....	115 00	50 00	.....	3 00	168 00
	St-Edouard de Frampton	61	79 50	61 00	30 50	.....	.....	171 00
	St-Hénédine	91	24 83	91 00	45 50	1 50	.....	162 83
	St-Isidore	106	7 58	106 00	50 00	58 40	.....	221 98
	Ste-Justine	74	8 14	74 00	37 00	.....	.....	119 14
	St-Léon de Standon	30	21 31	30 00	25 00	.....	.....	76 31
	Ste-Marguerite	118	23 98	118 00	50 00	50 00	.....	241 98
	St-Maxime	47	12 85	47 00	25 00	.....	.....	84 85
	St-Prosper de Watford	47	34 60	51 00	25 00	.....	.....	116 60
	Ste-Rose de Watford	37	26 21	37 00	25 00	.....	.....	88 21
		978	268 69	1030 00	463 00	137 81	41 50	1951 00
DRUMMOND.								
Municipality of	Durham	69	14 43	69 00	34 50	32 50	.....	150 43
	Durham-South	54	5 00	76 00	27 00	.....	.....	108 00
	Grantham	62	21 37	62 00	31 00	.....	.....	114 37
	Kingsey	36	.....	36 00	25 00	5 00	.....	66 00
	L'Avenir	25	.....	200 00	25 00	.....	.....	225 00
	Wendover & Simpson	80	41 01	81 00	40 00	91 51	.....	253 52
Parish of	Wickham-West	222	18 23	222 00	50 00	10 00	.....	300 23
	St-Eugène de Grantham	113	10 98	154 57	50 00	3 80	.....	219 35
	St-Germain de Grantham	139	16 98	139 00	50 00	100 11	.....	306 09
		800	128 00	1039 57	332 50	242 92	.....	1742 99
GASPÉ.								
Municipality of	Hâvre Aubert .....	.....	41 38	.....	.....	.....	.....	41 38
Parish of	N. D. de la Grande Rivière .....	.....	119 65	.....	.....	.....	.....	119 65
	Ste-Adélaïde de Pabos .....	.....	13 24	.....	.....	.....	.....	13 24
	Ste-Anne des Monts	28	25 61	38 00	25 00	14 35	.....	102 96
	St-Martin, Riv. aux Renards	28	27 54	32 00	25 00	.....	.....	84 54
	St-Michel de l'ercé	39	.....	39 00	25 00	7 28	2 05	73 33
	St-Norbert de Cap Chat	33	56 12	44 00	25 00	.....	.....	125 12
	St-Pierre de Malbaie .....	.....	36 42	.....	.....	.....	.....	36 42
		128	319 96	153 00	100 00	21 63	2 05	596 64
HOCHELAGA.								
Parish of	Enf.-Jésus de la Pte aux Trembles .....	.....	75 09	.....	.....	.....	.....	75 09
	St-Joseph, Riv. des Prairies	35	.....	35 00	25 00	.....	.....	60 00
	St-Léonard de Port-Maurice .....	.....	7 70	.....	.....	.....	.....	7 70
	Visitation du Sault-au-Récollet .....	.....	22 68	.....	.....	.....	.....	22 68
		35	105 47	35 00	25 00	.....	.....	165 47

CLUBS FOR THE YEAR ENDING THE 31ST DECEMBER 1899

EXPENDITURE

Deficit in 1898	Prizes at competitions	Purchase of implements	Purchase of stock	Other purchases	Sundries	Cost of management	Balance on 31 Dec. 1899	Total	REMARKS
.....	36 00	.....	.....	102 80	10 30	7 56	34 99	191 35	
.....	17 50	84 00	.....	205 45	.....	1 50	.....	305 45	
2 97	17 50	32 00	.....	99 00	3 50	13 03	.....	164 00	
.....	.....	8 00	17 75	51 00	.....	0 45	93 80	171 00	
.....	16 00	20 50	.....	84 63	4 00	9 46	28 24	162 83	
.....	.....	77 17	.....	98 58	.....	12 82	33 41	221 98	
.....	.....	.....	.....	55 00	.....	9 24	54 90	119 14	
.....	.....	44 00	.....	23 80	.....	5 55	2 96	76 31	
.....	.....	15 00	.....	118 00	.....	0 91	8 07	241 98	
.....	.....	.....	.....	47 00	.....	.....	37 85	84 85	
.....	.....	38 00	.....	57 00	.....	2 00	19 60	116 60	
.....	.....	45 00	.....	31 75	.....	5 33	6 13	88 21	
2 97	87 00	463 67	17 75	974 01	17 80	67 85	319 95	1951 00	
.....	.....	.....	87 50	27 50	0 75	10 51	24 17	150 43	
.....	32 00	.....	.....	76 00	.....	.....	.....	108 00	
.....	19 40	12 00	.....	62 00	10 00	6 00	4 97	114 37	
.....	.....	.....	35 00	.....	21 55	.....	9 45	66 00	
.....	.....	.....	.....	.....	.....	.....	225 00	225 00	No report.
.....	46 50	.....	.....	169 21	27 18	9 54	1 09	253 52	
.....	26 00	18 23	.....	206 46	.....	19 04	30 50	300 23	
.....	17 75	28 15	.....	154 57	2 00	7 97	8 91	219 35	
.....	39 70	.....	.....	235 11	.....	9 42	21 86	306 09	
.....	181 35	68 38	122 50	930 85	61 48	62 48	325 95	1742 99	
.....	.....	.....	.....	.....	.....	.....	41 38	41 38	No longer in operat.
.....	.....	.....	.....	.....	.....	.....	119 65	119 65	No longer in operat.
.....	.....	.....	.....	.....	.....	.....	13 24	13 24	No longer in operat.
.....	1 00	.....	.....	51 32	4 00	1 31	45 33	102 96	
.....	7 50	11 20	.....	32 00	4 00	5 40	24 44	84 54	
2 61	.....	29 50	.....	35 00	.....	6 22	.....	73 33	
.....	15 00	25 00	.....	44 00	3 50	5 30	32 32	125 12	
.....	.....	.....	.....	.....	.....	.....	36 42	36 42	No longer in operat.
2 61	23 50	65 70	.....	162 32	11 50	18 23	312 78	596 64	
.....	.....	.....	.....	.....	.....	.....	75 09	75 09	No longer in operat.
1 70	.....	.....	11 25	32 55	.....	3 74	10 76	60 00	No longer in operat.
.....	.....	.....	.....	.....	.....	.....	7 70	7 70	No longer in operat.
.....	.....	.....	.....	.....	.....	.....	22 68	22 68	No longer in operat.
1 70	.....	.....	11 25	32 55	.....	3 74	116 23	165 47	

STATEMENT OF RECEIPTS AND EXPENDITURE OF FARMERS'

FARMERS' CLUBS (By counties)		RECEIPTS					
		Number of members	Balance on 31 Dec. 1898	Subscrip- tions	Grant	Sundries	Deficit in 1899
HUNTINGDON.							
Municipality of	Franklin.....	11	05				11 05
	Havelock.....	38	73				38 73
	Hemmingford.....	60	10 91	63 00	30 00	9 00	112 91
Parish of	St-Anicet.....	151	56				151 56
	•	60	212 25	63 00	30 00	9 00	314 25
IBERVILLE.							
Parish of	St-Alexandre.....	25	21 04	134 68	25 00		180 72
	Ste-Anne de Sabrevois	95	73				95 73
	St-Athanase de Bleury	117	6 50	117 00	50 00	8 00	184 20
	Ste-Brigitte de Monnoir	53	30 09	53 00	26 50	4 50	114 09
	St-George de Henryville	159	23 33	159 00	50 00	10 00	242 33
	St-Grégoire le Grand.....	61	62 75	61 00	30 50		200 90
	St-Sébastien.....	124		124 00	50 00	10 50	184 50
		539	239 44	648 68	232 00	33 00	1202 47
JACQUES-CARTIER.							
Parish of	Ste-Anne du Bout de l'Île	112	12 96	112 00	50 00	33 25	223 39
	St-Genève.....	28		30 00	25 00	10 00	65 80
	St-Raphaël de l'Île Bizard.....	100	31 37	100 00	50 00		181 37
		240	44 33	242 00	125 00	43 25	470 56
JOLIETTE.							
Parish of	Le Bienheureux Alp. de Rodriguez	82	2 85	82 00	41 00		125 85
	St-Ambroise de Kildare.....	111	55 62	111 00	50 00	2 23	218 85
	Ste-Beatrix	101	41 51	110 42	50 00	0 60	202 53
	St-Charles Borromée	42		42 00	25 00		67 00
	St-Cléophas de Brandon	36	4 00	36 00	25 00		65 00
	St-Côme	59		59 00	29 50	50 75	143 20
	Ste-Elizabeth	131	4 42	179 00	50 00		233 42
	Ste-Émilie de l'Énergie	104		104 00	50 00		154 00
	St-Félix de Valois	114		114 00	50 0		164 00
	St-Jean de Matha		242 07				242 07
	Ste Mélanie	79	13 12	81 00	39 50		133 62
	St-Paul de Lavaltrie	114	6 23	114 00	50 00	334 23	504 46
	St-Thomas de Jersey-Nord	174	81 78	174 00	50 00	29 49	335 27
		1147	451 60	1206 42	510 00	417 30	2589 27

CLUBS FOR THE YEAR ENDING THE 31ST DECEMBER 1898

EXPENDITURE

Deficit in 1897	Prizes at competi- tions	Purchase of imple- ments	Purchase of stock	Other purchases	Sundries	Cost of manage- ment	Balance on 31 Dec. 1896	Total	REMARKS
					3 00	3 37	4 68	11 05	No larger in operat.
							38 73	38 73	No larger in operat.
	41 00		18 60	43 80		9 51	112 91	112 91	
							151 56	151 56	No larger in operat.
	41 00		18 60	43 80	3 00	12 88	194 97	314 25	
	50 00			120 00	6 50	4 22	180 72	180 72	
							95 73	95 73	No larger in operat.
	11 00	22 00	18 00	117 00	7 85	8 35	184 20	184 20	
	26 50	17 00	14 50	26 50	1 50	8 38	114 00	114 00	
	36 10		78 65	97 00	4 00	26 58	242 33	242 33	
		130 00	47 00		10 75	13 15	260 90	260 90	
	49 00			124 00	9 00	2 50	184 50	184 50	
	172 60	169 00	158 15	484 50	39 60	63 18	115 44	1202 47	
		96 00		112 00	7 55	7 84	223 39	223 39	
6 61	32 00		10 00	12 00		5 19	65 80	65 80	
	16 50		20 00	100 00		2 50	42 37	181 37	
6 61	48 50	96 00	30 00	224 00	7 55	15 53	42 37	470 56	
	31 50			70 32	5 50	8 89	9 64	125 85	
	50 00			112 58		4 32	51 95	218 86	
	42 50			105 21	4 00	10 86	39 96	202 53	
	25 00			39 27		2 73		67 00	
		15 00	6 00	33 48		2 52	8 00	65 00	
10 63	12 75			105 00	12 75	2 05		143 20	
	34 75	5 25		179 00	0 90	12 00	1 52	202 42	
32 96				104 04	2 50	3 50	11 00	144 00	
	70 00	45 00		28 89	10 00	9 86	0 25	164 00	
	49 00			168 00	7 50	16 85	0 72	242 72	Expenses of 1896.
	29 63			80 88	6 00	7 80	9 51	134 62	
	37 75			421 69	19 41	11 00	14 61	564 46	
	40 00	40 50		174 00	4 00	1 05	75 72	334 27	
43 61	422 88	105 75	6 00	1622 36	72 46	93 33	222 88	2589 27	

STATEMENT OF RECEIPTS AND EXPENDITURE OF FARMERS'

FARMERS' CLUBS (By counties)		RECEIPTS						Total
		Number of members	Balance on 31 Dec 1898	Subscrip- tions	Grant	Sundries	Deficit in 1899	
KAMOURASKA.								
Municipality of	Pohénégamook	42	3 50	42 00	25 00	.....	.....	70 50
Parish of	N.-D. de Liesse de la Rivière Ouelle	104	15 77	136 50	50 00	41 42	.....	243 69
	N.-D. du Mont-Carmel	113	50 94	113 00	50 00	.....	.....	213 94
	St-Alexandre	243	11 07	358 00	50 00	.....	.....	419 07
	St-André	46	2 63	46 00	25 00	.....	.....	73 63
	Ste-Anne de la Pocatière	96	.....	96 06	48 00	1 80	.....	145 80
	St-Denis	105	0 06	118 15	50 00	9 36	.....	177 57
	Ste-Hélène	76	47 94	76 00	38 00	43 34	.....	205 28
	St-Louis de Kamouraska	37	4 11	81 74	25 00	1 65	.....	112 50
	St-Pacôme	43	.....	45 00	25 00	.....	2 90	72 90
	St-Paschal	98	34 81	129 00	49 00	5 43	.....	218 24
	St-Philippe de Néri	103	9 21	179 00	50 00	.....	.....	238 21
		1106	180 04	1420 39	485 00	103 00	2 90	2191 33
LAKE ST-JOHN.								
Municipality of	Hébertville .....	.....	385 44	.....	.....	.....	.....	385 44
	Normandin and Albanel	70	2 70	70 00	35 00	3 75	.....	111 45
Parish of	St-Méthode	100	.....	107 00	50 00	.....	.....	157 00
	N.-D. du Lac St-Jean	47	86 10	326 09	25 00	60 80	.....	497 99
	St-Bruno	59	7 50	63 00	29 50	69 60	.....	169 60
	St-Cœur de Marie	125	170 77	125 00	50 00	.....	.....	345 77
	St-Félicien	142	21 95	142 00	50 00	534 65	.....	748 60
	St-François de Sales .....	.....	.....	.....	.....	0 03	.....	0 03
	St-Gédéon	109	.....	109 00	50 00	.....	.....	159 00
	St-Jérôme	210	11 78	210 00	50 00	.....	.....	271 78
	St-Joseph d'Alma	57	.....	63 25	28 50	122 75	.....	214 50
	St-Louis de Metabetchouan	100	.....	100 00	50 00	.....	.....	150 00
	St-Prime	110	37 41	110 00	50 00	.....	.....	197 41
	St-Thomas d'Aquin	61	18 99	61 00	30 50	12 01	.....	122 50
Mission of	Albanel	25	1 78	30 00	25 00	.....	.....	56 78
	N.-D. de la Rivière aux Dorés	34	2 84	49 97	34 00	.....	.....	86 81
	St-Henri de Péribonca	28	4 14	40 00	25 00	10 03	.....	79 17
	St-Michel de Mistassini .....	.....	75 11	.....	.....	.....	.....	75 11
		1277	826 51	1606 31	582 50	813 59	0 03	3828 94
LAPRAIRIE.								
Parish of	St-Constant	34	69 49	34 00	25 00	.....	.....	128 49
	St-Isidore	55	34 45	56 00	27 50	.....	.....	117 95
	St-Jacques le Mineur	52	71 74	52 00	26 00	209 43	.....	359 17
	St-Philippe .....	.....	20 13	.....	.....	.....	.....	20 13
		141	195 81	142 06	78 50	209 43	.....	625 74

CLUBS FOR THE YEAR ENDING THE 31ST DECEMBER 1898

EXPENDITURE

Deficit in 1897	Prizes at competi- tions	Purchase of imple- ments	Purchase of stock	Other purchases	Sundries	Cost of manage- ment	Balance on 31 Dec. 1898	Total	REMARKS
.....	12 50	.....	16 00	42 00	.....	.....	79 50	.....
.....	30 00	.....	23 00	166 02	.....	6 50	18 17	243 69	
.....	.....	74 00	.....	113 00	1 35	8 24	17 35	213 94	
.....	.....	.....	.....	358 00	.....	2 78	58 29	419 07	
.....	.....	.....	24 25	45 18	.....	2 31	1 89	73 63	
13 27	.....	21 30	.....	96 00	.....	15 23	.....	145 80	
.....	11 84	.....	41 95	116 40	1 00	6 38	.....	177 57	
.....	.....	.....	40 70	124 34	.....	5 20	35 04	205 28	
.....	17 97	.....	.....	71 09	5 00	7 69	10 75	112 50	
5 53	.....	15 73	5 00	38 80	.....	7 84	.....	72 90	
.....	.....	36 25	.....	114 13	.....	16 25	51 61	218 24	
.....	20 00	.....	6 00	179 00	11 00	9 00	13 21	238 21	
18 80	92 31	147 28	156 90	1463 96	18 35	87 42	206 31	2191 33	
.....	
.....	35 00	.....	.....	69 81	2 60	1 64	385 44	385 44	No longer in operat.
.....	.....	.....	46 50	100 00	.....	2 40	2 40	111 45	
.....	.....	.....	.....	347 96	.....	10 50	.....	157 00	
.....	.....	96 00	.....	132 60	.....	17 82	36 21	497 99	
.....	.....	25 00	.....	.....	.....	7 05	4 95	169 60	
.....	.....	44 00	.....	225 20	2 55	24 02	50 00	345 77	Expenses of 1898-99.
.....	.....	.....	.....	707 79	.....	26 57	14 24	748 60	
0 03	.....	.....	.....	.....	.....	.....	.....	0 03	No longer in operat.
.....	50 00	.....	.....	109 00	.....	.....	.....	159 00	
.....	.....	102 00	16 00	120 00	.....	28 10	5 68	271 78	
.....	.....	.....	.....	186 00	28 50	.....	.....	214 50	
1 00	.....	.....	.....	100 00	1 00	7 00	41 00	150 00	
.....	.....	.....	.....	110 00	.....	13 05	74 36	197 41	
.....	8 00	.....	40 00	61 00	0 50	4 33	8 67	122 50	
.....	.....	20 00	.....	30 00	2 50	2 64	1 64	56 78	
.....	.....	.....	5 00	49 25	4 06	5 00	23 50	86 81	
.....	.....	13 00	.....	50 03	1 85	4 26	10 03	79 17	
.....	.....	.....	.....	.....	.....	.....	75 11	75 11	No longer in operat.
1 03	93 09	300 00	107 50	2398 64	43 56	151 98	733 25	3828 94	
.....	
.....	13 00	.....	.....	38 54	8 00	6 99	61 96	128 49	
.....	.....	.....	56 00	36 40	0 60	20 00	4 95	117 95	
.....	.....	.....	.....	257 38	27 84	13 05	60 90	359 17	
.....	.....	.....	.....	.....	.....	.....	20 13	20 13	No longer in operat.
.....	13 00	.....	56 00	332 32	36 44	40 04	147 94	625 74	

STATEMENT OF RECEIPTS AND EXPENDITURE OF FARMERS'

FARMERS' CLUBS (By counties)		RECEIPTS					
		Number of members	Balance on 31 Dec. 1897	Subscrip- tions	Grant	Sundries	Deficit in 1898	Total
L' ASSOMPTION.							
Parish of	L' Ass. de Repentigny.....	43	2 50	43 00	25 00	3 25	73 75
	L'Epiphanie.....	103	13 45	106 00	50 00		169 45
	St-Charles de Lachenaye.....	76	11 06	80 00	38 00		129 06
	St-Henri de Mascouche.....	103	35 94	103 00	50 00		188 94
	St-Lin de Lachenaie.....					1 02	1 02
	St-Paul L' Ermité.....	100	25 55	100 00	50 00		175 55
	St-Pierre du Portage de L' Ass....	101	35 44	101 00	50 00	72 25	258 69
	St-Roch de L' Achigan.....	63	41 34	63 00	31 50		135 84
	St-Sulpice.....	70	31 71	70 00	35 00	19 00	155 71
		662	196 99	666 00	329 50	94 50	1288 01
LAVAL.							
Parish of	St-Dorothée	102	196 50	168 55	50 00	15 40	432 09
	St-François de Sales.....	46	105 84	46 00	25 00	31 25	208 09
	St-Martin.....	97		102 00	48 50		150 50
	Ste-Rose de Lima.....	80	10 06	80 00	40 00	171 00	301 06
	St-Vincent de Paul.....	101		142 50	50 00		192 50
		426	312 40	539 05	213 50	217 65	1284 34
LÉVIS							
Parish of	N.-D. de la Victoire	51	9 64	52 00	25 50	1 09	88 23
	St-David de l'Aube Rivière.....	42	1 38	42 00	25 00	4 50	72 88
	St-Etienne de Lauzon.....	39	3 60	39 00	25 00		67 60
	St-Henri de Lauzon.....	126	0 75	126 00	50 00	13 50	196 25
	St-Joseph de la Pointe Lévy.....	48	11 70	48 00	25 00		84 70
	St-Lambert.....	90	48 76	97 00	45 00	4 83	195 59
	St-Nicolas.....	124	17 80	125 00	50 00	234 20	427 00
		520	93 63	529 00	245 50	257 03	1126 25
L' ISLET.							
Parish of	N.-D. de Bonsecours de l'Islet....	116		170 00	50 00		220 00
	St-Aubert.....	67		71 00	33 50	8 72	113 22
	St-Cyrille de Lessard.....	103	17 76	103 00	50 00	9 55	180 31
	St-Eugène.....	42	38 20	43 00	25 00		106 20
	St-Jean Port Joli.....	82	16 00	93 00	41 00		150 00
	Ste-Louise.....	29	33 15	77 00	25 00	2 15	137 30
	St-Marcel de l'Islet.....	58	39 28	87 00	29 00		155 28
	St-Pamphile.....	44	63 13	49 00	25 00	91 77	228 90
	St-Roch des Aulnais.....	31	26 94	105 00	25 00		156 94
		572	234 46	798 00	303 50	93 92	1448 15

CLUBS FOR THE YEAR ENDING THE 31ST DECEMBER 1898

EXPENDITURE

Deficit in 1898	Prizes at competi- tions	Purchase of imple- ments	Purchase of stock	Other purchases	Sundries	Cost of manage- ment	Balance on 31 Dec. 1899	Total	REMARKS
.....	15 00	.....	6 00	38 70	.....	4 39	9 66	73 75	
.....	.....	17 00	41 95	106 00	3 50	1 05	.....	169 45	
.....	.....	.....	.....	80 00	.....	6 65	42 41	129 06	
.....	.....	.....	46 00	51 50	0 25	7 65	83 54	188 94	
1 02	.....	.....	.....	.....	.....	.....	1 62	.....	No longer in opera-
.....	30 00	.....	17 00	100 00	2 00	5 57	20 98	175 55	tion.
.....	21 00	.....	100 00	101 90	2 80	12 95	20 94	258 69	
.....	.....	86 77	10 00	15 75	8 00	13 08	2 24	135 84	
.....	.....	.....	37 00	49 00	0 63	15 77	52 31	155 71	
1 02	66 00	103 77	257 95	541 95	17 18	68 06	232 08	1288 01	
.....	
.....	.....	27 00	71 85	296 63	8 15	28 46	.....	432 09	Expenses of 1898-99.
.....	50 00	.....	34 00	45 00	7 00	9 52	62 57	208 09	
4 15	24 00	.....	.....	102 00	6 00	5 60	8 75	150 50	
.....	15 00	.....	170 00	80 00	.....	24 43	11 63	301 06	
.....	35 00	.....	16 00	101 00	2 00	22 89	15 61	192 50	
4 15	124 00	27 00	291 85	624 63	23 15	90 90	98 56	1284 24	
.....	
.....	33 75	.....	.....	52 00	.....	2 48	.....	88 23	
.....	18 00	3 00	.....	41 00	2 00	5 08	3 80	72 88	
.....	7 00	10 00	6 00	39 65	2 00	.....	2 95	67 60	
.....	.....	.....	.....	176 77	.....	13 19	0 29	190 25	
.....	.....	.....	.....	44 00	.....	3 35	37 35	84 70	
.....	32 00	8 25	10 00	97 00	6 00	1 00	41 34	195 59	
.....	.....	.....	63 30	322 10	18 50	14 60	8 59	427 00	
.....	90 75	21 25	79 30	772 52	28 50	39 70	94 23	1126 25	
.....	
.....	42 00	.....	.....	156 80	8 00	13 20	.....	220 00	
0 90	.....	.....	41 10	71 00	.....	0 22	.....	113 22	
.....	.....	70 00	.....	103 00	.....	7 31	.....	180 31	
.....	.....	.....	14 00	39 00	4 00	6 46	42 74	106 20	
.....	43 52	.....	.....	93 00	2 00	4 30	7 18	150 00	
.....	.....	.....	.....	77 00	.....	2 63	57 67	137 30	
.....	.....	30 00	.....	84 00	1 00	5 00	35 28	155 28	
.....	.....	26 30	.....	140 77	9 90	.....	51 93	228 90	
.....	.....	.....	.....	105 00	31 75	4 80	15 39	156 94	
0 90	85 52	126 30	55 10	869 57	56 65	43 92	210 19	1448 15	

STATEMENT OF RECEIPTS AND EXPENDITURE OF FARMERS'

FARMERS' CLUBS (By counties)		RECEIPTS						
		Number of members	Balance on 31 Dec 1898	Subscrip- tions	Grant	Sundries	Deficit in 1899	Total
LOTBINIÈRE.								
Parish of	St-Agapit de Beaurivage.....	108	33 27	109 00	50 00	23 92		216 19
	Ste-Agathe.....	54	47 00	54 00	27 00			128 00
	St-Antoine de Tilly.....	114		114 00	50 00	296 93		460 93
	St-Apollinaire.....		2 91					2 91
	Ste-Croix.....	136	0 50	136 00	50 00	40 00	2 50	229 00
	St-Edouard.....	116	4 50	116 00	50 00			170 50
	St-Émille de Lotbinière	139	44 49	148 46	50 00			242 95
	St-Flavien.....	114	27 60	114 00	50 00			191 60
	St-Gilles de Beaurivage.....	52	5 87	52 67	26 00	3 14	0 24	87 92
	St-Jean Deschailions.....	80		80 00	40 00	190 70		310 70
	St-Louis de Lotbinière.....	102	13 42	102 00	50 00	13 50		178 92
	St-Narcisse de Beaurivage.....	42	17 34	42 00	25 00			84 34
	Ste-Patrice de Beaurivage.....	108	2 17	111 00	50 00	124 71		287 88
	St-Philomène de Fortierville.....	136	35 68	351 80	50 00	8 75		446 23
	St-Sylvestre.....	103	71 71	118 00	50 00	8 39		248 10
		1404	306 46	1648 93	618 00	710 04	2 74	3286 17
MASKINONGÉ								
Parish of	St-Alexis.....	52	24 80	52 00	26 00			102 80
	St-Antoine de la riv. du Loup.....	95	28 00	120 00	47 50	0 35		195 85
	St-Charles de Mastigoche.....	41	2 45	41 00	25 00			68 45
	St-Didace.....	106		106 00	50 00			156 00
	St-Joseph de Maskinongé.....	70		169 80	35 00			204 80
	St-Justin.....	160	75 00	160 00	50 00	112 27		397 27
	St-Léon le Grand.....	115	15 00	115 00	50 00		30 00	210 00
	St-Paulin.....	92	50 00	92 00	46 00			188 00
		731	195 25	855 80	329 50	112 62	30 00	1523 17
MEGANTIC.								
Municipality of	Halifax-South.....	97	43 77	97 00	48 50		10 72	199 99
	Leeds.....	121	57 97	143 00	50 00	73 00		323 97
	Leeds-East.....	56	23 21	84 00	28 00	35 00	0 99	171 20
	Thetford.....	33		33 00	25 00			58 00
Parish of	Ste-Anastasie de Nelson.....						0 63	0 63
	Ste-Julie de Somerset.....	37	0 63	37 00	25 00			62 63
		344	125 58	394 00	176 50	108 00	12 34	816 42
MISSISQUOI.								
Municipality of	Dunham.....	30	83 43	30 00	25 00			138 43
	Farnham-West.....	92	16 99	92 00	46 00			154 99
	Town of Bedford.....	103	156 87	103 00	50 00	311 84	6 99	628 70
Parish of	Notre-D. de Stanbridge.....	50		54 00	25 00	67 98		146 98
		275	257 29	279 00	146 00	379 82	6 99	1069-10

CLUBS FOR THE YEAR ENDING THE 31ST DECEMBER 1898

EXPENDITURE

Deficit in 1898	Prizes at competi- tions	Purchase of imple- ments	Purchase of stock	Other purchases	Sundries	Cost of manage- ment	Balance on 31 Dec. 1899	Total	REMARKS
	4 20		70 00	99 38	17 25	25 36		216 19	
							128 00	128 00	No report.
	40 00			405 68	5 00	10 25		460 93	
							2 91	2 91	No longer in operat.
		47 25		176 00		5 75		229 00	
			25 00	116 00		1 75	27 75	170 50	
		40 50	28 00	148 46		0 80	25 19	242 95	
				114 00			77 60	191 60	
				85 38	2 54			87 92	
		18 00	20 50	270 70			1 50	310 70	
	36 50		15 00	100 05	4 50	2 67	20 20	178 92	
		16 00		41 71	9 74	4 71	12 18	84 34	
			105 00	111 00		6 88	65 00	287 88	
	38 75	41 22		352 07	4 00	1 52	8 67	446 23	
			86 35	111 61	0 90	6 96	48 28	248 10	
	119 45	162 97	349 85	2132 04	43 93	60 65	417 28	3286 17	
	50 00			52 00		0 80		102 80	
			58 00	120 00		6 00	11 85	195 85	
		27 00		38 95		2 05	0 45	68 45	
1 15		45 44		97 52	0 25	8 48	3 16	156 00	
	30 00			169 80		5 00		204 80	
	54 25			272 27	0 75		70 00	397 27	
		115 00		86 25	7 75	1 00		210 00	
			42 00	92 00			54 00	188 00	
1 15	134 25	187 44	100 00	928 79	8 75	23 33	139 46	1523 17	
			115 50	70 25	1 00	13 24		199 99	
			220 00		5 35	15 77	82 85	323 97	
			160 00			11 20		171 20	
	25 00			31 00	2 00			58 00	
0 63								0 63	No longer in operat.
	24 00					4 09	34 54	62 63	
0 63	49 00		495 50	101 25	8 35	44 30	117 39	816 42	
							138 43	138 43	No report.
		18 25	5 00	92 00		7 43	25 90	154 99	
	25 00	229 99		356 00	6 41	17 71		628 70	For 1898 and 1899.
		8 55		111 70		10 34	16 39	146 98	
	25 00	256 79	5 00	559 70	6 41	35 48	180 72	1069 10	

STATEMENT OF RECEIPTS AND EXPENDITRE OF FARMERS'

FARMERS' CLUBS (By counties)		RECEIPTS						
		Number of members	Balance on 31 Dec 1897	Subscrip- tion	Grant	Sundries	Deficit in 1898	Total
MONTCALM.								
Municipality of	Chertsey	66	0 71	66 00	33 00	2 00	.....	101 71
	Kilkenny	43	65 05	43 00	25 00	2 89	.....	135 94
	Wexford	30	0 87	30 00	25 00	2 26	0 87	59 00
Parish of	St-Alexis	122	74 89	181 00	50 00	14 00	.....	319 89
	St-Esprit .....	.....	2 93	.....	.....	.....	.....	2 93
	St-Jacques de L'Achigan	129	28 60	129 00	50 00	.....	.....	207 60
	Ste-Julienne	137	2 68	137 00	50 00	3 10	.....	192 78
	St-Liguori	63	57 01	63 00	31 50	12 00	.....	163 51
	Ste-Marie Salomée	111	52 20	111 00	50 00	.....	.....	213 20
		701	284 94	760 00	314 50	36 25	0 87	1396 56
MONTMAGNY.								
Municipality of	Montmagny	83	19 92	99 40	41 50	2 36	7 96	171 14
Parish of	Cap St-Ignace	72	56 51	72 00	36 00	10 56	.....	175 07
	N-D. du Rosaire	54	12 55	54 00	27 00	2 00	.....	95 55
	St-Antoine de L'Isle aux Grues	79	0 36	79 67	39 50	.....	.....	119 53
	St-Frs de Sales de la Riv. du Sud	70	90 93	70 00	35 00	363 79	.....	559 72
	St-Pierre de la Rivière du Sud	61	5 03	98 97	30 50	15 25	.....	149 75
		419	185 30	474 04	209 50	393 96	7 96	1270 76
MONTMORENCY.								
Parish of	L'Ange Gardien	29	7 64	43 00	25 00	4 00	.....	79 64
	Ste-Anne de Beaupré	27	10 78	32 00	25 00	.....	5 19	72 97
	Ste-Brititte de Laval	33	16 40	33 00	25 00	.....	.....	74 40
	St-Féréol	39	19 06	39 00	25 00	10 00	.....	93 06
	St-François de Sales	36	0 39	36 00	25 00	.....	.....	61 39
	St-Jean Baptiste	40	.....	40 00	25 00	.....	.....	65 00
	St-Joachim	65	44 00	65 00	32 50	.....	.....	141 50
	St-Laurent	44	24 89	44 00	25 00	.....	.....	93 89
	St-Pierre et St-Paul	53	29 46	53 00	26 50	.....	.....	108 96
	St-Tite des Caps	65	0 11	66 11	32 50	13 55	.....	112 27
	Visitation du Chateau Richer	58	9 68	58 00	29 00	.....	.....	96 68
	Ste-Famille	100	3 32	100 00	50 00	1 75	.....	155 07
		589	165 73	609 11	345 50	29 30	5 19	1154 83
NAPIERVILLE.								
Parish of	St-Cyprien de Delery	59	44 65	59 00	29 50	10 00	.....	143 15
	St-Edouard	105	46 35	105 00	50 00	.....	.....	201 35
	St-Michel	123	19 86	125 00	50 00	.....	.....	194 86
	St-Rémi de LaSalle	61	3 32	61 00	30 50	.....	.....	94 82
	St-Patrice de Sherrington	98	41 04	98 00	49 00	.....	.....	188 04
		446	155 22	448 00	209 00	10 00	.....	822 22

CLUBS FOR THE YEAR ENDING 31ST DECEMBER 1898

EXPENDITURE

Deficit in 1898	Prizes at competi- tions	Purchase of imple- ments	Purchase of stock	Other purchases	Sundries	Cost of manage- ment.	Balance on 31 Dec. 1899	Total	REMARKS
.....	31 95	.....	.....	61 38	.....	8 38	.....	101 71	For 1898 and 1899.
.....	.....	23 29	24 00	81 66	.....	6 99	.....	135 94	
.....	25 00	.....	.....	31 35	.....	2 65	.....	59 00	
.....	77 50	.....	.....	181 32	.....	18 09	42 98	319 89	
.....	.....	.....	.....	.....	.....	.....	2 93	2 93	No longer in operat.
.....	.....	.....	.....	129 00	0 90	15 84	61 86	207 60	
.....	37 60	8 00	.....	127 41	5 78	13 39	0 60	192 78	
.....	20 00	.....	43 00	63 00	3 00	2 51	32 00	163 51	
.....	46 00	9 00	.....	111 00	24 44	10 76	12 00	213 20	
.....	238 05	40 29	67 00	786 12	34 12	78 61	152 37	1396 56	
.....	
.....	17 00	.....	40 00	90 62	.....	23 52	.....	171 14	
.....	75 00	.....	.....	72 00	11 00	4 48	12 59	175 07	
.....	13 50	.....	13 00	53 35	.....	1 00	14 76	95 55	
.....	.....	.....	.....	78 63	.....	1 04	39 86	119 53	
.....	.....	.....	41 55	409 03	.....	4 90	104 24	559 72	
.....	.....	.....	2 00	86 55	15 25	14 00	31 95	149 75	
.....	105 50	.....	96 55	790 18	26 25	48 94	203 34	1270 76	
.....	
.....	8 00	.....	5 00	45 98	2 60	6 31	12 55	70 04	
.....	.....	24 00	12 00	32 00	.....	4 97	.....	72 00	
.....	.....	.....	36 00	25 00	.....	4 21	9 19	74 19	
.....	12 50	.....	30 00	36 23	3 00	5 72	5 61	90 06	
.....	24 05	.....	.....	36 00	.....	0 57	0 77	61 39	
.....	25 00	.....	.....	35 13	.....	4 87	.....	65 00	
.....	.....	.....	.....	65 00	.....	1 50	75 00	141 50	
.....	42 67	.....	.....	44 00	6 00	0 50	0 72	93 89	
.....	.....	29 46	.....	46 64	.....	6 36	26 50	108 86	
.....	.....	.....	12 00	65 00	.....	0 18	35 00	112 09	
.....	12 50	.....	8 00	58 00	.....	2 57	18 61	86 08	
.....	33 00	.....	.....	90 00	2 00	29 18	0 89	155 07	
.....	157 72	53 46	103 00	578 98	13 00	66 94	181 73	1154 80	
.....	
.....	60 00	.....	.....	.....	13 50	18 25	51 09	141 15	
.....	.....	36 85	.....	97 65	.....	14 65	35 20	201 41	
.....	7 81	.....	.....	114 00	2 25	8 88	61 97	194 87	
.....	.....	45 00	.....	30 50	.....	18 40	0 82	94 82	
.....	34 25	31 00	.....	98 00	9 85	1 00	17 34	188 04	
.....	102 06	112 85	.....	340 15	25 60	61 18	180 38	822 24	

STATEMENT OF RECEIPTS AND EXPENDITURE OF FARMERS'

FARMERS' CLUBS (By counties)		RECEIPTS						
		Number of members	Balance on 31 Dec. 1898	Subscrip- tions	Grant	Sundries	Deficit in 1899	Total
NICOLET.								
Parish of	Nativité de Bécancour.....	34	22 60	34 00	25 00	.....	.....	81 60
	Ste-Angèle de Laval.....	31	32 96	31 00	25 00	.....	0 46	89 42
	Ste-Brigitte des Saults.....	55	25 97	55 00	27 50	.....	.....	108 47
	St-Célestin.....	79	53 42	79 00	39 50	.....	.....	171 92
	St-Edouard de Gentilly.....	172	143 12	172 00	50 00	.....	.....	365 12
	Ste-Eulalie.....	101	.....	101 00	50 00	.....	.....	151 00
	Ste-Gertrude.....	31	.....	31 00	25 00	204 00	.....	260 00
	St-Grégoire.....	71	68 39	71 00	35 50	.....	.....	174 89
	St-Jean-Baptiste de Nicolet.....	41	78 90	41 00	25 00	4 41	.....	149 31
	Ste-Marie de Blanford.....	.....	31 00	.....	.....	.....	.....	31 00
	Ste-Monique.....	32	3 95	47 00	25 00	.....	.....	75 95
	Ste-Perpétue.....	64	20 64	64 00	32 00	.....	.....	116 64
	St-Pierre les Becquets.....	113	.....	113 00	50 00	4 15	.....	167 15
	Ste-Sophie de Levrard.....	72	3 36	72 00	36 00	.....	.....	111 36
	St-Sylvere.....	65	3 50	65 00	32 50	108 00	.....	209 00
	St-Wenceslas.....	109	.....	109 00	50 00	12 75	.....	171 75
		1070	487 81	1085 00	528 00	333 31	0 46	2434 58
OTTAWA.								
Municipality of	Amherst.....	33	.....	33 00	25 00	.....	.....	58 00
	Buckingham.....	113	12 50	113 00	50 00	.....	.....	175 50
	Hartwell.....	46	19 81	46 00	25 00	.....	.....	90 81
	Joly.....	103	103 00	103 00	50 00	.....	.....	256 00
	Loranger.....	34	18 50	42 00	25 00	.....	.....	85 50
	Ripon.....	43	.....	43 00	25 00	50 00	.....	123 00
	Suffolk & Addington.....	79	85 19	79 00	39 50	.....	.....	203 69
	Templeton-East.....	.....	0 50	.....	.....	.....	.....	0 50
	Thurso.....	41	23 96	41 00	25 00	.....	.....	89 96
Parish of	L'Ange-Gardien.....	32	42 27	32 00	25 00	43 87	.....	143 14
	L'Annonciation.....	29	33 96	44 00	25 00	.....	.....	102 96
	N. D. de Bonsecours.....	38	11 33	38 00	25 00	0 44	.....	74 77
	N. D. de la Fourvière.....	61	.....	61 00	20 50	4 50	.....	96 00
	St-André Avelin.....	46	8 05	46 00	25 00	.....	.....	79 05
	Ste-Angélique.....	140	55 35	140 00	50 00	34 84	.....	280 19
		838	414 42	866 00	445 00	133 65	.....	1859 07
PONTIAC.								
Municipality of	Grand-Calumet.....	35	30 81	36 00	25 00	.....	.....	91 81
	Onslow-South.....	79	40 27	86 00	39 50	.....	.....	165 77
	Témiscamingue.....	.....	136 76	.....	.....	.....	.....	136 76
	Bristol.....	26	.....	57 00	25 00	.....	.....	82 00
		140	207 84	179 00	89 50	.....	.....	476 34

CLUBS FOR THE YEAR ENDING THE 31ST DECEMBER 1899

EXPENDITURE

Deficit in 1898	Prizes at competi- tions	Purchase of imple- ments	Purchase of stock	Other purchases	Sundries	Cost of manage- ment	Balance on 31 Dec 1899	Total	REMARKS
.....	35 00	.....	.....	17 00	7 50	.....	22 10	81 60	
.....	32 00	.....	15 00	31 00	6 75	4 07	.....	89 42	
.....	.....	24 75	.....	51 15	0 80	4 30	27 47	108 47	
.....	.....	34 88	.....	79 00	.....	2 95	55 09	171 92	
.....	.....	.....	50 00	101 00	.....	.....	365 12	365 12	No report.
.....	25 00	.....	.....	226 50	.....	8 50	.....	151 00	
.....	.....	35 00	.....	68 16	.....	12 04	59 00	174 89	
.....	84 00	.....	.....	38 13	9 00	17 35	0 83	149 31	
.....	.....	.....	.....	47 00	.....	2 10	31 00	31 00	No longer in operat.
.....	21 50	24 00	.....	56 80	5 00	7 00	26 85	75 95	
3 40	.....	28 50	10 00	113 00	3 50	4 15	2 34	116 64	
.....	.....	.....	.....	72 00	.....	1 23	4 60	167 15	
.....	.....	.....	.....	173 00	.....	3 50	38 13	111 36	
1 63	22 50	.....	.....	144 00	.....	3 62	32 50	209 00	
.....	.....	.....	.....	.....	.....	.....	.....	171 75	
5 03	220 00	112 13	110 00	1217 74	32 55	71 41	665 72	2434 88	
3 00	25 71	.....	.....	21 03	3 00	5 26	.....	58 00	
.....	67 00	.....	75 00	.....	14 00	19 00	0 50	175 50	
.....	29 75	.....	.....	32 04	15 00	7 93	6 09	90 81	
.....	.....	17 00	10 50	42 00	.....	2 48	256 00	256 00	No report.
.....	.....	.....	25 00	34 30	.....	9 76	13 52	85 50	
.....	15 00	.....	33 50	79 00	6 00	.....	53 94	123 00	
.....	.....	.....	.....	.....	.....	.....	70 19	203 69	
.....	.....	.....	.....	.....	.....	.....	0 50	0 50	No longer in operat.
.....	25 00	.....	41 00	.....	.....	8 65	15 31	89 96	
.....	53 00	12 00	39 87	4 00	.....	7 50	26 77	143 14	
.....	.....	10 89	34 00	.....	.....	4 83	53 33	102 96	
.....	.....	.....	12 00	38 00	.....	9 70	15 07	74 77	
.....	29 05	.....	61 00	4 25	1 50	0 20	0 20	95 00	
.....	29 25	.....	39 05	3 00	7 75	.....	.....	79 05	
.....	55 90	.....	153 83	9 60	4 48	56 38	.....	280 19	
3 00	304 66	52 80	168 00	615 12	58 85	88 84	567 80	1859 07	
.....	.....	.....	.....	36 00	3 33	9 27	43 21	91 81	
.....	.....	.....	.....	.....	14 12	1 00	150 65	165 77	
.....	59 58	.....	75 00	.....	1 00	.....	77 18	136 76	No longer in operat.
.....	.....	.....	.....	.....	.....	.....	6 00	82 00	
.....	59 58	.....	75 00	36 00	18 45	10 27	177 04	876 14	

STATEMENT OF RECEIPTS AND EXPENDITURE OF FARMERS'

FARMERS' CLUBS (By counties)		RECEIPTS						
		Number of members	Balance on 31 Dec 1898	Subscrip- tions	Grant	Sundries	Deficit in 1899	Total
PORTNEUF.								
Parish of	N.-D. des Anges de Montauban..	92	21 50	92 00	46 00	10 00	.....	169 50
	St-Alban d'Alton.....	41	72 00	48 00	25 00	.....	.....	145 00
	St-Augustin de Demaure.....	106	26 77	107 00	50 00	10 00	.....	193 77
	St-Basile.....	57	.....	57 00	28 50	.....	.....	85 50
	St-Casimir.....	102	27 20	102 00	50 00	.....	.....	179 20
	St-Charles des Grondines.....	110	2 38	192 00	50 00	.....	.....	244 38
	Ste-Christine.....	112	25 00	124 25	50 00	29 11	.....	228 36
	Ste-Famille du Cap Santé.....	38	19 92	38 00	25 00	.....	.....	82 92
	Ste-Frs de Sales de la Pte au T...	43	5 76	43 00	25 00	.....	.....	73 76
	St-Gilbert.....	40	0 60	40 00	25 00	65 51	.....	131 11
	St-J. Bte des Ecureuils.....	36	.....	42 00	25 00	.....	.....	67 00
	Ste-Jeanne de Neuville.....	65	23 48	65 00	32 50	.....	.....	120 98
	St-Joseph de Deschambault.....	119	18 28	119 00	50 00	13 25	.....	200 53
	St-Raymond Nonnat.....	207	.....	207 00	50 00	.....	4 30	261 30
	St-Rémi.....	34	.....	38 00	25 00	.....	.....	63 00
	St-Thuribe.....	75	20 62	75 00	37 50	.....	.....	133 12
	St-Ubalde.....	140	23 59	140 00	50 00	3 75	.....	217 34
		1417	287 10	1529 25	644 50	131 62	4 30	2596 77
QUEBEC.								
Municipality of	Stoneham and Tewkesbury.....	.....	26 67	.....	.....	.....	.....	26 67
Parish of	Ancienne Lorette.....	108	.....	108 00	50 00	.....	.....	158 00
	N.-D. de Miseric. de Beauport.....	94	139 30	94 00	47 00	3 16	.....	283 46
	St-Charles de Charlesbourg.....	138	12 21	140 00	50 00	10 00	.....	212 21
	St-Colomb de Sillery.....	.....	113 86	.....	.....	.....	.....	113 86
	Ste-Foye.....	62	12 39	62 00	31 00	.....	.....	105 39
	St-Gabriel de Valcartier.....	38	.....	33 00	25 00	.....	0 50	58 50
		435	304 43	437 00	203 00	13 16	0 50	958 09
RICHELIEU.								
Parish of	L'Immac. Conception de St-Ours.....	107	24 86	107 00	50 00	.....	.....	181 86
	St-Aimé.....	85	.....	85 00	42 50	.....	.....	127 50
	Ste-Anne de Sorel.....	54	26 76	54 00	27 00	4 00	.....	111 76
	St-Joseph.....	.....	2 79	.....	.....	.....	.....	2 79
	St-Louis.....	121	13 23	167 50	50 00	5 50	.....	236 23
	St-Marcel.....	93	6 64	332 11	46 50	10 00	.....	395 25
	St-Pierre de Sorel.....	121	25 84	150 00	50 00	2 50	.....	228 34
	St-Robert.....	101	.....	107 72	50 00	.....	.....	157 72
	St-Roch de Richelieu.....	35	0 41	36 00	25 00	2 40	.....	63 81
	Ste-Victoire.....	.....	174 09	.....	.....	13 00	21 68	208 75
		717	274 62	1039 33	341 00	37 40	21 66	1714 01

CLUBS FOR THE YEAR ENDING THE 31st DECEMBER 1899

EXPENDITURE

Deficit in 1898	Prizes at competi- tions	Purchase of imple- ments	Purchase of stock	Other purchases	Sundries	Cost of manage- ment	Balance on 31 Dec. 1899	Total	REMARKS
55 00				85 21	3 00	10 29	16 00	169 50	
14 00	10 00			40 00	1 96	6 04	73 00	145 00	
			75 25	107 00	1 00	0 35	10 17	103 77	
			13 00	57 00			15 50	85 50	
21 00	24 85			102 00	8 20	0 10	23 05	179 20	
25 00	9 33	15 00		190 26	0 60	3 50	0 69	244 38	
30 00		30 00		149 45		18 91		228 36	
30 00				38 00	0 91	4 83	9 18	82 92	
24 00				43 00		2 79	3 97	73 76	
				106 11			25 00	131 11	
18 00				28 00		0 25	20 75	67 00	
	48 00			60 45	2 52	7 77	2 24	120 98	
	18 00	26 50		119 06	2 00	7 51	27 52	200 53	
	40 00			207 00		14 30		261 30	
	14 00			34 63		3 37	11 00	63 00	
	17 00			75 00		1 00	40 12	123 12	
29 00	8 75			140 00	2 50	11 77	25 32	217 34	
246 00	189 93	159 75	1582 11	22 69	92 78	303 51	2596 77		
							26 67	26 67	No longer in operat.
	23 00		97 20			13 41	24 39	158 00	
52 00			48 00	20 00		13 34	150 12	283 46	
40 00	15 00		140 00	8 00		6 45	2 76	212 21	
							113 86	113 86	No longer in operat.
	22 00		62 00				21 39	105 39	
		24 50	31 94			2 06		58 50	
92 00	60 00	24 50	379 14	28 00	35 26	339 19	958 09		
	46 00		107 00	12 50	15 67	0 69	181 86		
42 50			85 00				127 50		
48 00			54 00	3 90	4 36	2 40	111 76		
						2 79	2 79		No longer in operat.
51 25			167 50	5 50	4 66	7 32	236 23		
47 00	12 00		332 11		4 14		395 24		
34 00			154 00	8 00	15 78	16 56	228 34		
40 00			107 72	2 50	7 50		157 72		
22 50			36 00	2 00	0 40	2 91	63 81		
25 75			149 00	19 00	15 00		208 75		Expenses of 1898.
311 00	58 00		1192 33	52 50	67 51	32 67	1714 01		

STATEMENT OF RECEIPTS AND EXPENDITURE OF FARMERS'

FARMERS' CLUBS (By counties)		RECEIPTS						
		Number of members	Balance on 31 Dec 1898	Subscrip- tions	Grant	Sundries	Deficit in 1899	Total
RICHMOND								
Municipality of	Shipton	42	38					42 38
Parish of	St-Ers.-Xavier de Brompton	41	33 76	41 00	25 00	7 50	12 03	119 29
	St-George de Windsor	114	34 83	138 40	50 00	10 00		233 23
	St-Praxède de Brompton	51	22 78	56 00	25 50			104 28
		206	133 75	235 40	100 50	17 50	12 03	499 18
RIMOUSKI								
Municipality of	Casuspical	48	1 65	48 00	25 00	145 40	15 05	235 10
	Dalibaire and Romieu	39	14 15	66 25	25 00			105 40
	McNider	44	48 00	44 00	25 00	10 21		127 21
	Tessier	102	14 50	102 00	50 00	9 00		175 50
Parish of	N.-D. du Sacré-Cœur	38		90 62	25 00			115 62
	St-Anaclet de Lesard	32	7 45	35 00	25 00			67 45
	St-Benoit Joseph Labre	53	26 00	53 00	26 50			105 50
	St-Blandine	29		30 00	25 00	10 00		65 00
	Ste-Cecile du Bic	55	5 44	56 00	27 50			88 94
	St-Damase	47	7 74	47 00	25 00			79 74
	St-Donat	29		32 50	25 00			57 50
	St-Fabien	165	49 70	244 30	50 00	57 13		401 13
	Ste-Félicité	60	2 00	60 00	30 00			92 00
	Ste-Flavie de Lepage	103	2 08	103 00	50 00	2 01		157 09
	St-Gabriel	65		65 00	32 50			97 50
	St-Germain de Rimouski	77	1 72	77 00	38 50			117 22
	St-Jérôme de Matane	33		39 00	25 00	0 76		64 76
	Ste-Luce de Lessard	36	5 50	60 50	25 00		3 65	94 65
	St-Mathieu de Rioux	70	40 62	96 00	35 00			171 63
	St-Moise	49	7 22	49 00	25 00	32 00		113 22
	St-Octave		106 50			26 70		133 20
	St-Pierre du Lac	88	66 00	88 00	44 00			198 00
	St-Simon de la Baie de Ha! Ha!		3 05					3 05
	St-Valérien	73		146 00	36 50			182 50
		1340	409 33	1632 17	695 50	293 21	18 70	3048 91
ROUVILLE								
Parish of	N.-D. de Bonsecours	28	40 00	32 00	25 00	281 65		378 65
	St-Angé-Gardien	101	56 96	101 00	50 00	4 00		211 96
	St-Angèle	101	43 58	101 00	50 00	392 39		586 97
	St-Césaire	137	6 05	137 00	50 00	4 00	5 50	202 55
	St-Bilaire		72 26					72 26
	St-J.-Bte de Rouville	102	17 00	130 00	50 00			197 00
	Ste-Marie de Monnoir ..	145	69 00	1297 93	50 00			1416 93
	St-Michel de Rougemont	118	14 42	154 65	50 00	14 00		233 07
	St-Paul d'Abbotsford		74 40			3 50	2 95	80 85
		732	393 67	1953 58	325 00	699 54	8 45	3380 24

CLUBS FOR THE YEAR ENDING THE 31ST DECEMBER 1899

EXPENDITURE

Deficit in 1898	Prizes at competi- tions	Purchase of imple- ments	Purchase of stock	Other purchases	Sundries	Cost of manage- ment	Balance on 31 Dec. 1899	Total	REMARKS
							42 38	42 38	No longer in operat.
			108 84			10 45		119 29	
	77 25			138 40	1 00	5 77	10 81	233 23	
	64 50		9 20		9 00	10 00	11 58	104 28	
	141 75		118 04	138 40	10 00	26 22	64 77	499 18	
		17 00	20 80	190 52	0 90	5 88		235 10	
		28 00		66 25			11 15	105 40	
			50 00	19 69		0 22	57 30	127 21	
	24 00		26 00	111 00		1 92	12 58	175 50	
0 09	15 00			86 30	5 00	8 94	0 29	115 62	
	24 80			31 85	4 00	2 16	4 64	67 45	
				49 29		4 71	51 50	105 50	
	30 60			30 00	3 50	0 75	0 15	65 00	
				56 00		8 50	24 44	88 94	
				44 25	2 75	3 62	29 12	79 74	
0 54	25 00			25 00	0 50	6 46		57 50	
	50 00			286 36	24 00	15 07	25 70	401 13	
		27 50		55 80		7 20	1 50	92 00	
	39 50			94 90	7 50	12 47	2 72	157 09	
	28 25			65 00	3 00	1 25		97 50	
	23 40			77 00	16 00		0 82	117 22	
0 16				36 00		4 74	23 86	64 76	
		30 00		60 33		4 32		94 65	
				96 00		1 30	74 33	171 63	
		52 36		51 10	7 00		2 76	113 22	
		22 21		104 74	5 62	0 63		133 20	Expenses of 1895.
			67 00	85 00		3 00	43 00	198 00	
							3 05	3 05	No longer in operat.
0 97	20 86			146 00	5 00	9 67		182 50	
1 76	281 41	177 07	163 80	1868 38	84 77	102 81	368 91	3048 91	
	119 95			197 20		4 50	57 00	378 65	
	47 85			101 00		4 15	58 96	211 96	
	20 00	16 73		469 69	51 14	19 13	10 28	586 97	
	21 00			137 00	44 55			202 55	Expenses of 1898.
		30 26		42 00				72 26	
	17 50			130 00		8 08	41 42	197 00	
	59 90	22 00		1297 93			37 10	1416 93	
	47 25		13 00	154 65	1 50	16 00	0 67	233 07	
	21 00			37 00	14 00	8 85		80 85	Expenses of 1896.
	354 45	68 99	13 00	2566 47	111 19	60 71	205 43	3380 24	

STATEMENT OF RECEIPTS AND EXPENDITURE OF FARMERS'

FARMERS' CLUBS (By counties)		RECEIPTS						
		Number of members	Balance on 31 Dec. 1898	Subscrip- tions	Grant	Sundries	Deficit in 1899	Total
SAGUENAY								
Municipality of	Bergeronnes	36	32 81	50 51	25 00	2 40		110 72
	Les Escoumains	99		99 00	49 50			148 50
	Tadoussac	121	8 59	121 00	50 00	39 63		219 22
Parish of	St-Paul de Mille Vaches.....	98		103 00	49 00	405 99		557 99
Mission of	Magpie	29	38 75	44 55	25 00			108 30
		383	80 15	418 06	198 50	448 02		1144 73
SHEFFORD.								
Municipality of	Ely.....	109	8 14	109 00	50 00			167 14
	Granby.....		86 56					86 56
	Stukely North	61		61 00	30 50	11 00		102 50
	Ste-Cécile de Milton.....	40	29 11	49 25	25 00			103 36
	St-Valérien de Milton.....	113		117 00	50 00	10 00		177 00
	Village of Roxton-Falls...	68	4 74	100 30	34 00			139 04
Parish of	N. D. de Bonsecours.....	37		37 00	25 00			62 00
	St Alphonse	49	14 19	49 00	25 00	50 07		138 26
	St-Joachim de Shefford.....	40	11 17	40 00	25 00			76 17
	Ste-Pudentienne.....		24 50					24 50
		517	178 41	562 55	264 50	71 07		1076 53
SHERBROOKE.								
Municipality of	Ascot	80	31 39	80 00	40 00	5 00		156 39
	Orford	45	15 16	45 00	25 00			85 16
Parish of	St-Roch d'Orford	26	69 86	30 00	25 00			124 86
		151	116 41	155 00	90 00	5 00		366 41
SOULANGES								
Parish of	St-Clet.....	57		57 00	28 50	2 58		88 08
	St-Ignace du Côteau du Lac.....	61	1 40	81 10	30 50	3 25		116 25
	St-Joseph de Soulanges.....	52	16 72	52 00	26 00	5 00		99 72
	St-Polycarpe	103	45 26	103 00	50 00	115 09		313 35
	St-Télesphore.....	99	23 32	99 00	49 50	101 00		272 82
	St-Zotique	39	10 75	39 00	25 00			74 75
		411	97 45	431 10	209 50	226 92		964 97
STANSTEAD.								
Municipality of	Barford.....	35	9 87	35 00	25 00			69 87
	Barnston	38	25 21	38 00	25 00			88 21
	Coaticook	72	23 20	72 00	36 00	3 00		134 20
	Hatley	40	34 38	40 00	25 00	1 76	4 90	106 04
		185	92 66	185 00	111 00	4 76	4 90	398 32

CLUBS FOR THE YEAR ENDING THE 31ST DECEMBER 1899

EXPENDITURE

Deficit in 1898	Prizes at competi- tions	Purchase of imple- ments	Purchase of stock	Other purchases	Sundries	Cost of manage- ment	Balance on 31 Dec. 1899	Total	REMARKS
.....	.....	.....	.....	50 51	.....	4 60	55 61	110 72	
.....	65 00	.....	.....	73 50	.....	10 00	.....	148 50	
.....	.....	.....	46 92	163 13	.....	3 19	5 98	219 22	
5 42	.....	.....	.....	466 60	.....	33 61	52 36	557 99	
.....	29 50	.....	.....	42 00	1 75	9 94	25 11	108 30	
5 42	94 50	.....	46 92	795 74	1 75	61 34	139 06	1144 73	
.....	
.....	25 50	.....	.....	106 69	.....	2 75	32 20	167 14	
.....	.....	.....	.....	.....	.....	.....	86 56	86 56	No longer in operat.
7 58	.....	.....	36 00	45 75	2 75	10 42	.....	102 50	
.....	.....	.....	20 00	47 35	5 00	4 01	27 00	103 36	
.....	50 00	.....	.....	117 00	5 00	4 00	1 00	177 00	
.....	28 90	.....	.....	100 30	6 00	3 23	0 61	139 04	
.....	.....	.....	40 00	.....	.....	8 15	13 85	62 00	
.....	.....	30 00	.....	95 63	.....	6 33	6 30	138 26	
.....	16 70	.....	.....	40 00	7 00	6 30	6 17	76 17	
.....	.....	.....	.....	.....	.....	.....	24 50	24 50	No longer in operat.
7 58	121 10	30 00	96 00	552 72	25 75	45 19	198 19	1076 53	
.....	
.....	29 00	.....	.....	80 00	1 50	7 90	37 99	156 39	
.....	31 00	.....	.....	44 00	.....	2 25	7 91	85 16	
.....	.....	.....	.....	.....	.....	.....	124 86	124 86	No report.
.....	60 00	.....	.....	124 00	1 50	10 15	170 76	366 41	
.....	
8 44	.....	.....	.....	47 22	16 97	6 89	8 50	86 08	
.....	27 90	.....	.....	71 39	.....	9 34	7 62	116 25	
.....	32 81	.....	.....	48 36	1 00	6 56	10 92	99 72	
.....	55 75	.....	.....	173 59	17 00	10 64	56 37	313 35	
.....	30 00	.....	.....	200 00	.....	12 63	30 19	272 82	
.....	.....	.....	30 00	39 00	.....	5 75	.....	74 75	
8 44	146 46	.....	30 00	579 56	34 97	51 81	113 73	964 97	
.....	
.....	14 00	.....	10 00	33 80	.....	4 62	7 45	69 87	
.....	23 00	.....	.....	36 10	2 00	1 90	25 21	88 21	
.....	36 00	.....	8 60	51 00	23 70	8 21	7 69	134 20	
.....	.....	60 00	.....	36 00	1 75	8 29	.....	106 04	
.....	73 00	60 00	18 60	156 90	26 45	23 02	40 35	398 32	

STATEMENT OF RECEIPTS AND EXPENDITURE OF FARMERS'

FARMERS' CLUBS (By counties)		RECEIPTS						
		Number of members	Balance on 31 Dec 1898	Subscrip- tions	Grant	Sundries	Deficit in 1899	Total
ST-HYACINTHE.								
Parish of	N. D. de St-Hyacinthe.....	86		86 00	43 00	42 60	2 16	173 76
	La Présentation.....	103	25 00	128 30	50 00			203 30
	St-Barnabé.....	84	11 38	84 00	42 00		1 97	139 35
	St-Charles.....	107	25 71	107 00	50 00			182 71
	St-Damase.....	144	4 05	476 23	50 00	18 50		548 78
	St-Denis.....	75	1 32	102 45	37 50			141 27
	St-Hyacinthe le Confesseur.....	100		100 00	50 00			150 00
	St-Judes.....	110		110 00	50 00	4 50		164 50
	St-Marie Madeleine.....	100		263 11	50 00			313 11
	St-Thomas d'Aquin.....	106		106 0	50 00	5 00		161 00
		1015	67 46	1563 09	472 50	70 60	4 13	2177 78
St-JOHN								
Parish of	St-Bernard de Lacolle.....		35 26					35 26
	St-Blaise.....	40	14 79	40 00	25 00	4 00		83 79
	St-John.....		67 90			4 60	5 00	77 50
	Ste-Marguerite de Blairfindie.....	113	18 37	113 00	50 00	134 05		315 42
	St-Paul de l'Ile aux Noix.....	47		47 00	25 00			72 00
	St-Valentin.....	38	24 79	38 00	25 00	2 50	2 53	92 82
		238	161 11	238 00	125 00	145 15	7 53	676 79
ST-AURICE.								
Parish of	Ste-Anne d'Yamachiche.....	122	102 07	123 00	50 00			275 07
	St-Barnabé.....	98		107 00	49 00	10 00	10 00	176 00
	St-Boniface de Shawenigan.....	82		82 00	41 00	10 00	2 70	135 70
	St-Elie de Caxton.....	85	45 99	85 00	42 50			173 49
	St-Etienne des Grès.....	35	39 54	35 00	25 00	2 19		101 73
	Ste-Flore.....	97		122 00	48 50		31 60	202 10
	St-Mathieu de Caxton.....		50 30					50 30
	St-Sévère.....	46	2 81	46 00	25 00			73 81
	Visitation de la Pointe du Lac....	114	10 08	114 00	50 00	1 25		175 33
	679	250 79	714 00	331 00	23 44	44 30	1363 53	

CLUBS FOR THE YEAR ENDING THE 31ST DECEMBER 1898

EXPENDITURE

Deficit in 1897	Prizes at competi- tions	Purchase of imple- ments	Purchase of stock	Other purchases	Sundries	Cost of manage- ment	Balance on 31 Dec. 1898	Total	REMARKS
4 39	66 50			86 00		16 87		173 56	
	50 00			128 30			25 00	203 30	
		55 00		75 60		8 75		139 35	
	68 25			107 00		6 91	0 55	182 71	
	68 00			476 23		4 55		548 78	
	31 50			102 05	4 00	2 55	1 17	141 27	
	41 00			100 00		2 87	6 13	150 00	
	47 00			110 00	1 25	5 00	1 25	164 50	
	50 00			263 11				313 11	
	42 00			106 00	3 00	10 00		161 00	
4 39	464 25	55 00		1554 29	8 25	57 50	34 10	2177 78	
							35 26	35 26	No longer in operat.
	37 50					13 00	33 29	83 79	
	74 00				3 50			77 50	Expenses of 1898.
	56 00		10 00	217 30	9 00	14 00	9 12	315 42	
		30 15				6 90	34 95	72 00	
	18 75		58 00	10 00		6 07		92 82	
	186 25	30 15	68 00	227 30	12 50	39 97	112 62	676 79	
			213 00			18 15	43 92	275 07	
			65 00	107 00		4 00		176 00	
1 77	39 75		6 00	76 26	2 00	9 92		135 70	
	15 85	37 00		85 00	3 00	9 34	23 39	173 49	
	25 52			32 65	6 00	5 04	32 52	101 73	
7 26			55 00	112 46		27 38		202 10	
							50 30	50 30	No longer in operat.
	23 00			46 00		1 91	2 90	73 81	
			47 00	114 00	3 29	3 50	7 54	175 33	
9 03	104 12	37 00	386 00	573 37	14 29	79 24	160 48	1363 53	

STATEMENT OF RECEIPTS AND EXPENDITURE OF FARMERS'

FARMERS' CLUBS (By counties)		RECEIPTS						
		Number of members	Balance on 31 Dec 1898	Subscrip- tions	Grant	Sundries	Deficit in 1899	Total
TÉMISCOUATA.								
Municipality of	Bégon	115	60					115 60
	Hocquart	43	25 00	43 00	25 00			93 00
	Viger	105	4 84	105 00	50 00	7 70		167 54
	Whitworth	93	1 18	93 00	46 50	1 80		142 48
Parish of	N.-D. du Lac	59	29 43	59 00	29 50	1 58		119 51
	N.-D. des Neiges de Trois-Pistols	38	25 00	38 00	25 00			88 00
	N.-D. du Portage	40	15 55	40 00	25 00	62 25		142 80
	N.-D. des Sept Douleur		8 00					8 00
	St-Antonin	107	39 00	107 00	50 00	41 00		237 00
	St-Arsène	141	41 30	240 00	50 00		62 52	393 82
	St-Clément	72	30 91	72 00	36 00			138 91
	St-Eloi	51		51 00	25 50			76 50
	Ste-Françoise	27		32 00	25 00		0 09	57 09
	St-George de Cacouna	104	29 12	104 00	50 00			183 12
	St-J.-Bte. de Pile Verte	155	10 00	151 10	50 00	175 40		386 50
	St-Louis du Ha! Ha!	71	66 02	71 00	35 50	10 00		182 52
	St-Patrice de la Riv. du Loup	107		107 00	50 00			157 00
	St-Paul de la Croix	35	25 76	48 50	25 00			99 56
	Ste-Rose du Déglé	70	24 59	108 88	35 00			168 47
		1278	491 30	1470 48	633 00	299 73	62 61	2957 12
TERREBONNE								
Municipality of	Abercrombie	105	21 86	105 00	50 00	1 84		78 70
	Doncaster	103	62 58	103 00	50 00	1 12		216 70
	Salaberry et Grandison	78	25 82	78 00	39 00			142 82
Parish of	Ste-Adèle	105	10 61	105 00	50 00			165 61
	Ste-Agathe	160	909	164 00	50 00		2 91	226 00
	Ste-Anne des Plaines	100		174 69	50 00	3 50	1 72	229 91
	St-Janvier de Blainville	105	12 55	305 97	50 00			368 52
	St-Jérôme, Rivière du Nord	83		84 00	41 50	102 71	0 50	228 71
	St-Louis de Terrebonne	99	16 03	99 00	49 50		0 81	165 34
	Ste-Marguerite du Lac Masson	101	46 00	101 00	50 00			197 00
	St-Sauveur		271 50					271 50
	Ste-Sophie de Lacorne	45	29 42	59 50	25 00			113 92
	Ste-Thérèse de Blainville	101	18 34	102 00	50 00	10 00		180 34
		1185	523 80	1481 16	555 00	119 17	5 94	2685 07
THREE-RIVERS								
Parish of	N.-Dame des Trois-Rivières	79	24 97	83 00	39 50	18 00		185 47
VAUDREUIL								
Municipality of	Newton	36	61 45	36 00	25 00	14 31		136 76
Parish of	Ste-Madeleine and Rigaud	41	453	41 00	25 00			70 53
	Ste-Marthe	84		84 00	42 00	80 90	8 35	215 25
	Très-Saint Rédempteur	129		129 00	50 00			179 00
		290	65 98	290 00	142 00	95 21	8 35	601 54

CLUBS FOR THE YEAR ENDING THE 31ST DECEMBER 1898

EXPENDITURE

Deficit in 1898	Prizes at competi- tions	Purchase of imple- ments	Purchase of stock	Other purchases	Sundries	Cost of manage- ment	Balance on 31 Dec. 1899	Total	REMARKS
		47 60		68 00				115 60	Expenses of 1898.
	30 00		10 00	43 00	3 49	6 51		93 00	
	49 00			93 08	5 00	20 46		167 54	
	29 40			93 00	3 85	2 86	13 37	142 48	
			27 75	56 91		6 32	28 53	119 51	
	20 00			40 34		2 66	25 00	88 00	
		16 00		102 25		4 18	20 37	142 80	
					3 00		5 00	8 00	Expenses of 1898.
		89 00		147 49		0 51		237 00	
	25 00	120 50		240 00	0 15	8 17		393 82	
	30 00			66 96		7 56	34 39	138 91	
				47 43		5 85	23 22	76 50	
0 15	15 00	11 00		27 44	0 15	3 35		57 09	
		56 40		104 00		4 84	17 88	183 12	
		5 50	11 00	326 50	1 75	6 50	35 25	386 50	
		35 00		62 25		8 75	76 52	182 52	
1 00	27 50			107 00	3 75	3 53	14 22	157 00	
	20 00			48 65		3 00	27 61	99 26	
	19 00		15 00	108 68	9 08	3 07	13 64	168 47	
1 15	264 90	381 00	63 75	1782 98	30 22	98 12	335 00	2957 12	
	5 50		23 00	105 00	4 50	25 70	15 00	178 70	
			59 00	104 60		8 40	44 70	216 70	
		50 00		78 00			14 82	142 82	
			50 00	105 00		3 50	7 11	165 61	
		33 50	21 90	164 00		6 60		226 00	
1 92	48 68			174 49	4 50	0 32		229 91	
	59 05			305 97		3 50		368 52	
0 27	43 00			159 71	4 15	21 58		228 71	
	50 00			99 00	8 00	8 34		165 34	
	10 00	25 15	23 00	101 00			37 85	197 00	
							271 50	271 50	No longer in operat.
			14 25	59 50		0 13	40 04	113 92	
	63 00			101 00	2 00	7 17	7 17	180 34	
2 19	279 23	108 65	191 15	1557 27	23 15	85 24	438 19	2685 07	
			89 00	29 50		27 63	19 34	165 47	
	49 75			50 32	11 00	3 05	22 64	136 76	
							70 53	70 53	
14 39	3 50		26 50	151 40	17 23	2 23		215 25	
	50 00			129 00				179 00	
14 39	103 25		26 50	330 72	28 23	5 28	93 17	601 54	

STATEMENT OF RECEIPTS AND EXPENDITURE OF FARMERS'

FARMERS' CLUBS (By counties)		RECEIPTS						Total
		Number of members	Balance on 31 Dec 1898	Subscrip- tion	Grant	Sundries	Deficit in 1899	
VERCHÈRES.								
Parish of	Ste-Antoine	172	32 48	172 00	50 00			254 48
	St-Frs.-Xavier de Verchères.	61	43 17	79 00	30 50			152 67
	Ste-Julie.....	80	18 81	80 00	40 00			138 81
	St-Marc de Cournoyer.....	96	15 30	96 00	48 00	97 00		256 30
	St-Mathieu de Belœil		311 49					311 49
	Ste-Théodosie	105	10 44	105 00	50 00			165 44
	Ste-Trinité de Contrecoeur	102		102 00	50 00	1 90	3 31	157 21
		616	431 69	634 00	268 50	98 90	3 31	1436 40
WOLFE.								
Municipality of	Dudswell.....	34	34 41	34 00	25 00			93 41
	Garthby.....		53 36					53 36
	Ham-North	146	38 64	146 00	50 00	23 00		257 64
	Ham South-West	53	5 15	58 00	26 55			89 65
	D'Israëli.....	75	2 50	75 00	37 50			115 00
	Lake Weedon	80	26 94	80 00	40 00			146 94
	Stratford.....	32		33 00	25 00			58 00
	Weedon	93		124 90	46 50		16 94	188 34
	Wolfestown	74	12 14	85 75	37 00	47 98		182 87
	Wotton	147	4 64	147 10	50 00	70 25		271 89
Parish of	St-Camille.....		0 15					0 15
	St-Joseph of Ham South		23 77					23 77
		734	201 70	783 65	337 50	141 23	16 94	1481 02
YAMASKA.								
Parish of	N.-D. de Pierreville.....	35	25 00	35 00	25 00			85 00
	St-Antoine de la Baie du Febvre.	107	5 75	107 00	50 00	10 00		172 75
	St-Bonaventure d'Upton	82	2 41	90 75	41 00			134 16
	St-David	110	38 60	110 00	50 00	164 35		362 95
	St-Elphège.....	53	6 59	53 00	26 50			86 09
	St-François du Lac						1 21	1 21
	St-Guillaume d'Upton	190	15 58	193 00	50 00	20 30	1 96	279 94
	St-Pie de Guire.....	104	54 20	104 00	50 00			208 20
	St-Thomas de Pierreville.....	30	14 53	30 00	25 00			69 53
	St-Zéphirin de Courval.....	86		86 00	43 00	2 65	11 12	142 77
		797	112 66	808 75	360 50	197 30	13 39	1542 60

STATEMENT OF RECEIPTS AND EXPENDITURE OF FARMERS'
RECAPITULATION

FARMERS' CLUBS		Number of clubs by counties	RECEIPTS						
COUNTIES	Number of members		Balance on 31 Dec. 1898	Subscrip- tions	Grant	Surpluses	Deficit in 1899	Total	
Argenteuil.....			58 83					58 83	
Arthabaska.....	16	1210	244 89	1217 82	624 00	301 44		2388 15	
Bagot.....	9	789	321 10	810 50	358 00	24 43	2 50	1516 53	
Beauce.....	20	1875	486 84	2308 98	834 00	1622 07	11 19	5263 08	
Beauharnois.....	4	178	82 87	179 00	101 00	8 17	9 72	380 76	
Bellechasse.....	11	643	247 63	731 50	348 00	231 25	14 94	1573 32	
Berthier.....	10	810	203 88	887 67	386 00	179 06	2 40	1659 01	
Bonaventure.....	8	523	245 48	593 70	282 50	629 12		1750 80	
Brome.....	2	77	38 84	77 00	50 00	159 35	501 22	826 41	
Chambly.....	6	433	250 33	780 94	221 00	346 84	152 33	1751 44	
Champlain.....	13	1154	397 89	1676 50	477 00	1381 23	5 06	3937 68	
Charlevoix.....	10	838	502 99	1444 01	391 00	621 54	10 39	2969 93	
Chateauguay.....	4	227	74 34	229 00	125 00	278 35	5 78	712 47	
Chicoutimi.....	10	730	417 29	999 25	361 00	2051 95		3829 49	
Compton.....	13	923	285 33	885 89	441 00	677 24	12 85	2302 31	
Two Mountains.....	6	520	68 96	576 00	257 50	30 00	2 83	935 31	
Dorchester.....	12	978	278 69	1030 00	463 00	137 81	41 50	1951 00	
Drummond.....	9	800	128 00	1039 57	332 50	242 92		1742 99	
Gaspé.....	4	128	319 96	153 00	100 00	21 63	2 05	596 64	
Hochelaga.....	1	35	105 47	35 00	25 00			165 47	
Huntingdon.....	1	60	212 25	63 00	30 00	9 00		314 25	
Iberville.....	6	539	239 44	648 68	232 00	33 00	49 35	1202 47	
Jacques-Cartier.....	3	240	44 33	242 00	125 00	43 25	15 98	470 56	
Joliette.....	12	1147	451 60	1206 42	510 00	417 30	3 95	2589 27	
Kamouraska.....	12	1106	180 04	1420 39	485 00	103 00	2 90	2191 33	
Lake St. John.....	15	1277	826 51	1606 31	582 50	813 59	0 03	3828 94	
Laprairie.....	3	141	195 81	142 00	78 50	209 43		625 74	
L'Assomption.....	8	662	196 99	666 00	329 50	94 50	1 02	1288 01	
Laval.....	5	426	312 40	539 05	213 50	217 65	1 64	1284 24	
Levis.....	7	520	93 63	529 00	245 50	257 03	1 09	1126 25	
L'Islet.....	9	572	234 46	798 00	303 50	93 92	18 27	1448 15	
Lotbinière.....	14	1404	306 46	1648 93	618 00	710 04	2 74	3286 17	
Maskinongé.....	8	731	195 25	855 80	329 50	112 62	30 00	1523 17	
Megantic.....	5	344	125 58	394 00	176 50	108 00	12 34	816 42	
Missisquoi.....	4	275	257 29	279 00	146 00	379 82	6 99	1069 10	
Montcalm.....	8	701	284 94	760 00	314 50	36 25	0 87	1396 56	
Montmagny.....	6	419	185 30	474 04	209 50	393 96	7 96	1270 76	
Montmorency.....	12	590	165 73	609 11	345 50	29 30	5 19	1154 83	
Napierville.....	5	446	155 22	448 00	209 00	10 00		822 22	
Nicolet.....	15	1070	487 81	1085 00	528 00	333 31	0 46	2434 58	
Ottawa.....	14	838	414 42	866 00	445 00	133 65		1859 07	
Pontiac.....	3	140	207 84	179 00	89 50			476 34	
Portneuf.....	17	1417	287 10	1529 25	644 50	131 62	4 30	2596 77	
Quebec.....	5	435	304 43	437 00	203 00	13 16	0 50	958 09	
Richelieu.....	8	717	274 62	1039 33	341 00	37 40	21 66	1714 01	
Richmond.....	3	206	133 75	235 40	100 50	17 50	12 03	499 18	
Rimouski.....	23	1340	409 33	1632 17	695 50	293 21	18 70	3048 91	
Rouville.....	7	732	393 67	1953 58	325 00	699 54	8 45	3380 24	
Saguenay.....	5	383	80 15	418 06	198 50	448 02		1144 73	
Shefford.....	8	517	178 41	562 55	264 50	71 07		1076 53	
Sherbrooke.....	3	151	116 41	155 00	90 00	5 00		366 41	

CLUBS FOR THE YEAR ENDING 31ST DECEMBER 1898
BY COUNTIES

EXPENDITURE

Deficit in 1897	Prizes at competi- tions	Purchase of imple- ments	Purchase of stock	Other purchases	Sundries	Cost of manage- ment	Balance on 31 Dec. 1899	Total	REMARKS
							58 83	58 83	
20 69	230 91	161 90	154 00	1436 21	48 30	86 39	249 75	2388 15	
	364 75	24 00	30 03	895 65	18 89	40 97	142 27	1516 53	
41 12	231 65	204 34	172 10	3476 04	17 48	294 92	825 43	5263 08	
4 52	62 00	110 00	88 50	19 05	4 20	45 64	46 85	380 76	
12 26	100 67	85 09	259 43	678 76	36 71	81 30	319 19	1573 32	
7 83	258 10	73 65	86 35	915 24	73 84	62 32	181 68	1659 01	
23 78	170 54	83 00	41 45	1023 14	35 33	96 72	276 84	1750 80	
501 22	50 60			213 81	7 50	17 99	35 29	826 41	
59 51	31 00	49 05		1371 42	138 39	22 58	79 49	1751 44	
7 73	207 05	103 90	288 95	3014 90	25 35	126 57	163 23	3937 68	
1 42	101 70	60 20	294 05	2125 93	23 03	182 92	180 68	2969 93	
	93 50	24 50	52 70	375 99	11 00	55 01	99 77	712 47	
	30 00	171 18	112 82	3037 48	33 48	101 50	343 03	3829 49	
0 77	164 40	15 75	495 39	956 43	191 51	108 31	369 75	2302 31	
2 85	140 00		101 13	559 31	8 61	20 36	103 05	935 31	
2 97	87 00	463 67	17 75	974 01	17 80	67 85	319 95	1951 09	
	181 35	58 38	122 50	930 85	61 48	62 48	325 95	1742 99	
2 61	23 50	65 70		162 32	11 50	18 23	312 78	596 64	
1 70			11 25	32 55		3 74	116 23	165 47	
	41 00		18 60	43 80	3 00	12 88	194 97	314 25	
	172 60	169 00	158 15	484 50	39 60	63 18	115 44	1202 47	
6 61	48 50	96 00	36 00	224 00	7 55	15 53	42 37	470 56	
43 61	422 88	105 75	6 00	1622 36	72 46	93 33	222 88	2589 27	
18 80	92 31	147 28	156 90	1463 96	18 35	87 42	206 31	2191 33	
1 03	93 00	300 00	107 50	2398 64	43 56	151 98	733 23	3828 94	
	13 00		56 00	332 32	36 44	40 04	147 94	625 74	
1 02	66 00	103 77	257 95	541 95	17 18	68 06	232 08	1288 01	
4 15	124 00	27 00	291 85	624 63	23 15	90 90	98 56	1284 24	
	90 75	21 25	79 30	772 52	28 50	39 70	94 23	1126 25	
0 90	85 52	126 30	55 10	869 57	56 65	43 92	210 19	1448 15	
	119 45	162 97	349 85	2132 04	43 93	60 65	417 28	3286 17	
1 15	134 25	187 44	100 00	928 79	8 75	23 33	139 46	1523 17	
0 63	49 00		495 50	101 25	8 35	44 30	117 39	816 42	
	25 00	256 79	5 00	559 70	6 41	35 48	180 72	1069 10	
	228 05	40 29	67 00	786 12	34 12	78 61	152 37	1396 56	
	105 50		96 55	790 18	26 25	48 94	203 34	1270 76	
	157 72	53 46	103 00	578 98	13 00	66 94	181 73	1154 83	
	102 06	112 85		340 15	25 60	61 18	180 38	822 22	
5 03	220 00	112 13	110 00	1217 74	32 55	71 41	665 72	2434 58	
3 00	364 66	52 80	168 00	615 12	58 85	88 84	567 80	1859 07	
	59 58		75 00	36 00	18 45	10 27	277 04	476 34	
	246 00	189 93	159 75	1582 11	22 69	92 78	303 51	2596 77	
	92 00	60 00	24 50	379 14	28 00	35 26	345 19	958 09	
	311 00	58 00		1192 33	52 50	67 51	32 67	1714 01	
	141 75		118 04	138 40	10 00	26 22	64 77	499 18	
1 76	281 41	177 07	163 80	1868 38	84 77	102 81	368 91	3048 91	
	354 45	68 99	13 00	2566 47	111 19	60 71	205 43	3380 24	
5 42	94 50		46 92	795 74	1 75	61 34	139 06	1144 73	
7 58	121 10	30 00	96 00	552 72	25 75	45 19	138 19	1076 53	
	60 00			124 00	1 50	10 15	176 76	366 41	

STATEMENT OF RECEIPTS AND EXPENDITURE OF FARMERS'
RECAPITULATION

FARMERS' CLUBS		RECEIPTS						
COUNTIES	Number of clubs by counties	Number of members	Balance on 31 Dec. 1898	Subscrip- tions	Grant	Sundries	Deficit in 1899	Total
Soulanges	6	411	97 45	431 10	209 50	226 92	.....	964 97
Stanstead	4	185	92 66	185 00	111 00	4 76	4 90	398 32
St-Hyacinthe.....	10	1015	67 46	1563 09	472 53	70 60	4 13	2177 78
St-John.....	4	238	161 11	238 00	125 00	145 15	7 53	676 79
St-Maurice.....	8	679	250 79	714 00	331 00	23 44	44 30	1363 53
Témiscouata.....	17	1278	491 30	1470 48	633 00	299 73	62 61	2957 12
Terrebonne.....	12	1185	523 80	1481 16	555 00	119 17	5 94	2685 07
Three Rivers.....	1	79	24 97	83 00	39 50	18 00	.....	165 47
Vaudreuil.....	4	290	65 98	290 00	142 00	95 21	8 35	601 54
Verchères.....	6	616	431 69	634 00	268 50	98 90	3 31	1436 40
Wolfe.....	9	734	201 70	783 65	337 50	141 23	16 94	1481 02
Yamaska	9	797	162 66	808 75	360 50	197 30	13 39	1542 60
	512	39822	15282 35	47759 63	19171 00	16639 95	1172 60	100025 53

SOCIETIES FOR THE YEAR ENDING 31ST DECEMBER 1898
BY COUNTIES

EXPENDITURE

Deficit in 1898	Prizes at competi- tions	Purchase of imple- ments	Purchase of stock	Other purchases	Sundries	Cost of manage- ment	Balance on 31 Dec. 1899	Total	REMARKS
8 44	146 46	.....	30 00	579 56	34 97	51 81	113 73	964 97	
.....	73 00	60 00	18 60	156 90	26 45	23 02	49 35	398 32	
4 39	464 25	55 00	....	1554 29	8 25	57 50	44 10	2177 78	
.....	186 25	30 15	68 00	227 30	12 50	39 97	112 62	676 79	
9 03	104 12	37 00	386 06	573 37	14 29	79 24	166 48	1363 53	
1 15	24 90	381 00	63 75	1782 98	30 22	98 12	335 00	2957 12	
2 19	279 23	108 65	191 15	1557 27	23 15	85 24	438 19	2685 07	
.....	.....	.....	89 00	29 50	.....	27 63	19 34	165 47	
14 39	103 25	.....	26 50	330 72	28 23	5 28	93 17	601 54	
4 59	223 00	79 00	.....	700 18	10 48	46 48	372 67	1436 40	
46 38	229 50	.....	168 06	815 54	26 59	67 28	127 67	1481 02	
27 81	179 65	142 00	45 80	926 71	14 50	101 30	104 83	1542 60	
910 04	9249 37	5306 09	6824 49	58097 02	1954 88	3977 53	13706 11	109025 53	

STATEMENT OF RECEIPTS AND EXPENDITURE OF AGRICULTURAL

DESIGNATION OF SOCIETIES	RECEIPTS										Total
	Number of members	Balance on 31 Dec. 1898	Government grant	Subscriptions of members	Entries for the competitions	Entire to Exhibition grounds	Right to sell on the grounds	Sundry receipts	Balance due 31 Dec 1899		
Argenteuil	210	155 10	394 25	630 02	33 00	475 39				1687 76	
Arthabaska	468	261 08	481 00	564 20		40 20				1346 48	
Bagot	423	43 21	423 00	578 00				1 30		1045 51	
Beauce Div. A	267		267 00	360 50	17 00			25 00	116 95	786 45	
" " B									11 00	11 00	
Beauharnois	325		326 00	475 10		145 25	24 00	263 00	178 88	1412 23	
Berthier	202		426 00	644 00	16 00	4 15	1 00	346 00	7 95	1445 10	
Bonaventure No. 2 B	56	1 90	71 00	104 26						177 16	
Brome	405	116 03	743 25	583 10		1087 34		277 50		2807 22	
Chambly		53 69						149 00		202 69	
Champlain	406	93 78	406 00	583 10				2 00		1084 88	
Charlevoix Div. A	127	89 25	254 00	402 50						715 75	
" " B	151	140 35	282 00	395 30	25 00					842 65	
Chateauguay	281	32 43	359 00	568 54		240 45			278 04	1478 46	
Chicoutimi	216		428 00	639 80				1046 30		2114 10	
Compton No. 1	115		173 00	270 58		797 90	162 00	551 85	588 72	2544 05	
" " 2	145	71 03	201 00	309 10				19 00		600 13	
Two-Mountain's	240	631 99	415 00	632 90	19 00			355 36		2054 25	
Drummond	119	14 02	119 00	174 04				4 73	6 32	318 11	
Gaspé No. 1 A	43	113 45	59 00	91 54				2 97		266 96	
" " 2		58 83								53 83	
" " 1 B		1 50								1 50	
" " 2	27	17 83	42 50	63 78				26 00		150 11	
Hochelaga	95	967 48	213 50	316 18				1490 25		2987 41	
Huntingdon Div. A	383		436 00	326 00		767 94	120 00	547 95	131 72	2329 61	
" " B	203		249 00	377 94		148 50		292 55	140 11	1208 10	
Iberville	189	181 26	319 00	505 64						1005 90	
Jacques-Cartier	395	390 63	536 00	609 20		422 17	105 00			2072 00	
Joliette No. 1	201		246 00	292 30				32 00	182 30	752 60	
" " 2		640 58								640 58	
Kamouraska		88 38								88 38	
Lake St-John	675	163 53	675 00	502 40						1340 93	
Laprairie	175		428 00	652 40				25 00	0 47	1105 87	
L'Assomption	286	106 12	417 00	618 80				6 78		1148 70	
Laval	280	173 76	469 00	620 60					176 73	1440 09	
Lévis		24 10								24 10	
L'Islet	148		295 00	476 00				1215 00		1986 00	
Lothbinière No. 1		1 84								1 84	
Maskinongé	253	20 29	397 00	623 72	27 00					1068 01	
Mégantic No. 1	131	17 82	518 00	313 30		61 00		169 14	137 53	1246 79	
" " 2	204		214 00	291 40		60 00		2 25		567 65	
Missisquoi	427		601 00	576 50	94 75	590 85	83 00	113 00	311 88	2370 98	
Montcalm	260	89 21	417 00	626 60	9 50			2 67	88 41	1233 39	
Montmagny	111	100 05	302 00	499 12				10 90		912 07	
Montmorency Div. A	125	78 66	250 00	403 10				1 65		733 41	
" " B	200	33 20	250 00	380 90				52 00		716 10	
Napierville	64	435 93	81 00	113 40				314 38		944 71	
Nicolet	200		400 00	644 60				30 25	27 79	1102 64	
Ottawa No. 1 A	37	6 48	288 00	209 50	111 55	278 40	40 00	34 00		927 93	
" " 2	52		54 00	76 52					9 91	140 43	
" " 1 B									270 37	270 37	
" " 2	72	146 41	81 00	121 56						348 97	

SOCIETIES FOR THE YEAR ENDING 31ST DECEMBER 1898

EXPENDITURE

Balance due 31 Dec 1898	Prizes at exhibitions	Farm competitions	Crops	Ploughing matches	Expenses of judges	Expenses of exhibition	Purchase and care of cattle	Incidental expenses	Timothy and clover seed &c	Standings	Salary of secretary	Balance on hand 31 Dec. 99	Total
872 01	72 00	97 00	59 50	60 35	342 14	27 00	33 79	270 17	10 00	107 01	40 00	1487 76	
414 25				37 00	72 15	48 78	33 79	270 17		61 96	399 38	1346 48	
607 89					13 00		40 00	211 50		61 11	112 01	1045 51	
78 03	339 50	93 00		21 00	37 82		35 15	125 00	5 50	51 45		786 45	
11 00												11 00	
154 06	618 61				547 21					92 35		1412 23	
88 94	618 70	156 75		34 50	258 21		25 00	213 00		50 00		1445 10	
											177 16	177 16	
928 75	129 00	790 00		54 00	415 81		343 15			125 00	21 51	2807 22	
				51 00	25 00	19 90	6 00			7 13	93 66	202 69	
529 50				135 10	20 00	43 14		49 00	204 40	19 61	70 05	1084 88	
							580 58	3 97		40 92	120 28	745 75	
				48 50	11 50		138 38	4 27	583 38	55 02	1 60	842 65	
806 90				23 70	391 56		159 58			96 72		1478 46	
36 76							750 50			1227 22	40 00	2114 10	
560 40	906 15	80 25		86 00	49 00	436 35	425 00			100 00		2641 05	
444 00				15 00	18 50	18 60	32 75			37 02	34 26	600 13	
702 25	214 00			68 00	93 4	46 94	60 75	275 42		52 57	112 05	2054 25	
250 80					20 50	19 75	6 25			20 81		318 11	
98 60		30 00		12 60	8 75		0 98			10 52	106 11	266 96	
											58 83	58 83	
											1 50	1 50	
54 00		7 00		5 50	13 30		2 90			5 79	61 62	150 11	
		192 00	154 00	98 50			718 89			81 43	1742 59	2987 41	
238 96	1249 35			50 40	226 07	5 00	158 00			278 15	123 68	2329 61	
216 51	842 45				58 55	27 00				4 40	59 19	1208 10	
	462 45		247 00	43 00	61 82					1 25	57 00	1005 90	
	648 25			108 50	75 70	446 96	42 56			92 22	657 81	2072 00	
99 48	426 25			2 00	14 50		70 90	90 24		49 23		752 60	
											640 58	640 58	
											88 38	88 38	
			432 74			187 33	27 38	347 96		69 65	275 87	1340 93	
4 52	511 25		67 00	97 00	53 50	39 75	65 50	195 00		72 35		1105 87	
	629 50				21 00	87 10	52 51			55 31	303 25	1148 70	
	531 00	251 00		101 00	119 22	33 50	49 95		278 42	76 00		1440 09	
											24 10	24 10	
42 14	341 25			16 00	41 19	1200 00	35 00	144 00		40 42	126 00	1986 00	
											1 84	1 84	
451 60	174 00			4 50	65 50			198 50		62 58	111 33	1068 01	
252 75					565 38	264 60	63 60			100 46		1246 79	
142 14	179 20			25 00	44 02	33 00		76 50		25 11	42 68	567 65	
177 56	791 50		447 50	57 25	541 43	212 25				143 49		2370 98	
	679 50		106 50	18 00	36 35		55 85	208 50		80 69		1233 39	
		50 00	218 75	23 00	47 00	2 89	170 00	8 10	64 44	40 89	257 00	912 07	
	305 20	42 25	111 50	44 00	38 25		15 85	125 00		47 74	3 62	733 41	
	316 25			4 00	48 50		53 24	106 00		37 03	151 08	716 10	
	321 00	110 00		32 00	35 10		26 10		152 86	36 69	230 96	944 75	
106 76	456 00	96 00	47 00	2 00	57 00		48 28	200 00	31 00	58 00		1102 64	
	586 00									279 91	60 00	2 02	927 93
35 04		86 50		1 30	5 00		5 73			6 86		140 43	
270 37												270 37	
			20 00				95 74	15 00	68 50	14 20	135 53	348 97	

STATEMENT OF RECEIPTS AND EXPENDITURE OF AGRICULTURAL

DESIGNATION OF SOCIETIES	RECEIPTS									
	Number of members	Balance on 31 Dec. 1894	Govern- ment grant	Subscrip- tions of members	Entries for the com- petitions	Entrée to Exhibition grounds	Right to sell on the grounds	Sundry receipts	Balance due 31 Dec 1899	Total
Pontiac, Div. A.....	249	.....	251 00	366 20	.....	267 40	30 00	377 00	.....	1191 60
“ “ B.....	140	111 12	145 00	205 00	.....	142 80	11 00	.....	.....	614 92
Portneuf.....	212	279 30	212 00	310 12	.....	.....	.....	4 58	.....	806 00
Quebec city, St-Sauveur Div.	85	0 59	81 00	328 00	.....	.....	.....	285 00	.....	694 59
“ County.....	199	.....	207 00	291 14	13 00	84 80	1 00	65 00	25 36	687 30
Richelieu.....	400	88 72	400 00	584 60	.....	.....	.....	32 00	36 41	1141 73
Richmond.....	294	.....	294 00	430 14	12 25	213 74	32 50	350 68	782 78	2116 09
Rimouski, Div. A.....	79	.....	121 92	191 48	.....	.....	.....	.....	.....	313 40
Rouville.....	421	574 48	421 00	578 30	.....	87 00	24 27	27 98	.....	1713 03
Saguenay.....	.....	578 52	.....	.....	.....	.....	.....	.....	.....	578 52
Shefford.....	189	.....	446 20	647 90	72 65	501 85	73 00	373 30	.....	2114 90
Sherbrooke.....	227	.....	477 00	284 80	.....	.....	.....	.....	.....	761 80
Soulanges.....	207	.....	405 00	642 50	38 50	64 50	27 20	.....	194 46	1372 16
Stanstead.....	420	.....	556 00	578 60	.....	442 28	39 75	29 00	224 65	1870 28
St-Hyacinthe.....	540	.....	540 00	542 60	.....	.....	.....	101 50	139 20	1323 30
St-John.....	235	.....	403 00	634 10	.....	.....	.....	14042 40	161 52	15241 02
St-Maurice.....	295	.....	400 00	616 10	.....	.....	.....	0 83	88 44	1105 37
Témiscouata.....	155	.....	171 60	255 06	.....	.....	.....	.....	97 48	523 54
Terrebonne No. 1.....	122	.....	200 00	316 00	.....	.....	.....	2 00	11 63	529 63
“ No. 2.....	116	6 83	232 00	317 80	.....	.....	.....	.....	.....	556 63
Three-Rivers.....	101	51 34	202 00	322 60	.....	.....	.....	25 00	.....	600 94
Vaudreuil No. 1.....	347	.....	348 00	507 52	47 25	4 20	.....	400 00	638 62	1945 59
“ No. 2.....	.....	290 90	.....	.....	.....	.....	.....	9 10	.....	300 00
Verchères.....	597	261 88	597 00	525 50	.....	56 25	10 00	.....	.....	1450 63
Wolfe No. 1.....	98	14 40	196 00	316 16	.....	.....	.....	3 30	.....	529 86
“ No. 2.....	170	.....	170 00	248 80	.....	.....	.....	.....	.....	418 80
Yamaska.....	309	.....	309 00	452 04	36 00	.....	.....	.....	228 00	1025 07
	15599	7828 28	21821 62	28741 10	572 45	6844 36	783 72	558 40	5293 66	5423 64

SOCIETIES FOR THE YEAR ENDING THE 31ST DECEMBER 1899

EXPENDITURE

Balance due 31 dec 1898.	Prizes at exhibitions	Farm competitions	Crops	Ploughing matches	Expenses of judges	Expenses of exhibition	Purchase and care of cattle	Incidental expenses	Timothy and clover seed &c	Stoneries	Salary of Sec. Treas.	Balance on hand 31 Dec 99	Total
208 20	339 32				7 75	280 70		173 56		69 00	60 95	52 12	1191 60
	261 33				10 25	145 55		34 70			27 00	136 09	614 92
							263 50	64 35	93 75		25 61	418 79	806 00
	303 00				16 75	29 40		61 53			41 00	242 91	694 59
14 01	324 00		79 50	63 00	20 00	72 75				70 00	44 04		637 30
	628 00		74 50		21 50	76 20		51 23	200 00	40 30	50 00		1141 73
305 55	1122 90	21 75	85 50		49 50	173 79		257 10			100 00		2116 09
3 86			202 20		28 00	1 25		11 00	42 42		20 21	4 46	313 40
	699 65				25 00	50 91		20 25	210 50	10 00	60 00	636 72	1713 03
												578 52	578 52
72 51	557 85	174 00	621 50		71 25	160 01		114 75		294 00	100 00		2114 90
	734 05					2 75					25 00		761 80
138 24	564 00	225 75		129 00	48 00	56 35		82 50	56 64		71 68		1372 16
309 12	673 00		461 00		62 05	116 00	40 20	67 10		65 00	76 81		1870 28
189 11	536 00				78 00	167 24		8 75	270 00		74 20		1323 30
183 88	2847 50		420 00		36 00	9753 82		1001 82					15241 02
150 00	533 40				25 00	6 22		1 25	160 50	179 00	50 00		1105 37
67 83	291 00				9 00	32 00		23 54	70 35		29 82		523 54
13 03	417 37				21 00	25 45		18 13			34 65		529 63
					43 65	10 00	130 00	25 00	278 50		35 84	8 64	556 63
	293 75	9 00	50 00		39 00	5 20		20 00	101 00		36 25	46 74	600 94
80 36	331 20		240 00	56 00	40 50	961 41		92 75			93 37		1945 59
										300 00			300 00
	910 35				19 00	132 85		43 48	298 50		40 00	15 45	1450 63
	349 50				30 00	58 25		42 00		17 86	32 25		529 86
32 61	273 00					76 50				1 00	24 46	11 23	418 80
88 01		250 00	283 50		91 00	13 56		90 91	146 78		61 31		1125 07
4118 99	319090	2427 00	5432 19	1287 75	1049 87	1751068	1086 86	4977 70	5743 49	3334 48	3821 70	8823 85	95423 64

EXPERIMENTAL FRUIT STATIONS OF THE PROVINCE OF QUEBEC.

Village-des-Aulnaies, 18th October, 1900.

HONORABLE F. G. MIVILLE DÉCHÈNE,

Commissioner of Agriculture,

Quebec.

Sir,

I have the honor to submit the third annual report on the Fruit growing Stations of the province.

VILLAGE DES AULNAIES STATION

The dry spring which we had considerably retarded vegetation, which was slow in starting. We had to give several waterings to the trees which appeared to suffer most from the drought and the same precaution had to be taken later on with the Lombard plum trees, overladen with fruit, which threatened to drop before ripening owing to the want of rain. After a copious watering, a good mulch of straw litter was placed around the foot of each tree in order to retain the moisture. All these plum trees were treated in this way with a single exception in order to establish a comparison.

The fruit of the latter did not come to maturity and dropped, while the others treated as above ripened their fruit well, though they were smaller than usual. The crop of plums was abundant, the trees being loaded down with them to such a degree that supports had to be put under the branches that were bending down with their burthen. Eight year trees from the graft yielded an average of six gallons of very fine plums.

The Ponds' Seedling, Grand Duke, Bradshaw, Reine Claude de Bavay, Green Gage, Washington and Golden Drop also yielded abundantly.

Among the apple trees bearing this year were the Astrakans, Tetofsky, Transparent of Russia, Duchess, Fameuse, St-Lawrence, Alexander, Calville, Russet and several other varieties.

All the trees were sprayed with the Bordeaux Mixture and Paris Green so that there is very little of the fruit worm-eaten. The Fameuse and St. Lawrence are very fine, only a few rare apples being attacked with rust.

The little apple seedlings in the nursery are very fine and vigorous and the same may be said of those at the other stations, of which I omitted to make mention in the Station reports. All without exception were in good condition.

Appended is a list of the trees imported from France, which bore fruit this year.

I also append as an annex, copy of the circular letters addressed on the 6th June and 24th August last to the directors of our different stations. As my duties as Secretary of the Canadian Commission at the Paris Exhibition prevented me from personally visiting the fruit-growing stations, I authorized Mr. Albert Verreault, a most competent arboriculturist, to perform the inspection and report to me, and the notes which he handed me relative to the result of his inspections will, no doubt, be read with interest.

There was an abundant crop of small fruits of all kinds. The quality, however, of the red and white raspberries and the strawberries was not all that could be desired. This was due to the prolonged rains, when they were almost ripe. The blackcap raspberries and the Gregg, Ohio and Lucretia blackberries were all in excellent condition.

The crop of gooseberries was also large. Among the bearing varieties were the Industry, Crown Bob, Downing and Houghton. It was necessary to spray the gooseberry and currant bushes twice with Paris green to destroy the caterpillars.

Three varieties of black currants were in bearing—the Black Champion, Naples Black and Lee's Prolific.

The white currants, of which the most desirable variety is the White Grape, yielded very handsomely.

I only mention the varieties which it is most profitable to grow, omitting those which yield little and only bear small fruit.

The strawberries grown were the Sharpless, the Williams, and Wilson's Albany, which yielded a fairly abundant crop, though it might have been better in quality, the rain having spoiled the fruit, which rotted in the field.

The cherry trees also gave a fine crop, the average price obtained for the fruit being 50 cents a gallon. The bearing varieties this year were the French Cherries. Early Richmond, Montmorency and Louis Philippe. The Black Tartarian should bear next year, judging from the appearances this autumn.

Several varieties of pear trees also bore fruit. They were: Dwarf Pears, the Louise Bonne, Flemish Beauty, and Doyenne d'Eté; Standard Pears—the Keiffer, Clapp's Favorite, Vermont Beauty, Flemish Beauty, Doyenne d'Eté and Petite Marguerite. These trees were loaded with very fine fruit.

Generally speaking, the fruit crop was abundant. At the L'Islet county exhibition, held at St-Jean Port-Joli in September last, we exhibited 30 varieties of apples for the market and 21 varieties of plums.

As usual, all the trees have been protected for the winter. In the first place, they have been earthed up and a good layer of manure has been put around each to protect the roots. They have been also tied to stakes and balsam firs in order that they may not be crushed by the snow.

It is to be hoped that the managers of the other stations will take the same precautions this fall as in past years. But to obviate all misunderstanding on the subject, a circular letter containing all the necessary instructions with a view to the protection of the trees in the autumn, was addressed to each of the managers.

I have the honor to be

Sir,

Your obedient servant,

AUGUSTE DUPUIS.

*Director General of Fruit Stations
of the Province of Quebec.*

List of Trees imported from France which bore fruit in 1900.

PLUMS

1. Mirabelle Bouxieres—Fruit small, round, yellow.
9. Berghold's Mirabelle—Fruit small, yellow, good.
4. McLaughlin—Fruit large, greenish yellow, tinged with lilac, good.
4. Reine Claude, green—Greatly resembles Reine Claude de Montmorency.
1. Reine Claude de Raizambault—Fruit large, greenish yellow, clear, good.
1. Reine Claude de Bryanston—Fruit large, green spotted with red, good.
5. Reine Claude de Wazon—Fruit medium to large, yellow tinged with rose, good.
1. Reine Claude de Davion—Fruit large, amber yellow, good.
2. Norbert—Fruit small, round, blueish black, good for preserving.
1. Ste-Catherine—Fruit small, medium, pale yellow.
3. Violet Damson—Fruit medium, violet black, good.
3. Late Violet Damson—Fruit medium or small, violet, red, good.

APPLES

4. Reine des Reinettes.—Deep marbled yellow, streaked with red, very good.
1. Reinette de Cuzy.—Pretty large fruit (not yet ripe)
1. Tendre Laborde.—Pretty large fruit (" " ")
1. Ækofen Pippin.—Medium fruit (" " ")
1. Peach Apple.—Medium fruit (" " ")

CIRCULAR LETTER ADDRESSED TO EACH STATION MANAGER.

Villages des Aulnaies, 6th June, 1900.

Mr.

Manager of

Dear Sir,

Please send me news of the plantation, letting me know in what condition the trees are. Are they looking well and do they seem strong? You must not be alarmed, however, if some varieties do not show signs of life at once (especially after the drought which we have had) for some are slower than others to start into growth in the spring.

I would also like to know the number that perished during the winter, as well as the name of the variety in each case.

I call your attention to the little boards or pickets which are addressed to you annually and upon which are printed the names of the varieties. It is very important to put these boards in position as soon as they reach you and to replace those that may have become displaced during the winter, because otherwise the tickets put upon the trees may be lost and the varieties can no longer be identified, whereby it is also rendered impossible to judge of the merit of the varieties, for which purpose the fruit stations have been established.

Now that the caterpillars are about to make their appearance, I would advise you to spray your plants with the aid of the pump sent you, using a teaspoonful of Paris Green per bucket of water. Ordinarily, the currant and gooseberry bushes are the first to suffer from the ravages of these pests which first attack the lower leaves.

Do not fail to visit your plantation daily in order to assure yourself that the caterpillars are doing no damage. The essential point is to destroy them as soon as they make their appearance.

It would be advisable to at once remove the heavy mulch which you were recommended to put around your trees last fall and to mix the rotten manure with the earth in order to provoke a strong growth at the beginning of the season.

In doing this, you will please also examine the foot of the apple trees near the earth and for two or three inches beneath its surface to see if the Borer worms have got in, in which case they should be destroyed with the aid of a wire, then stopping up the wound and putting on tarred paper.

Please see also that no suckers form at the foot of the trees; remove them as fast as they form, for otherwise they will exhaust the trees and cause them to die.

I enclose you hereto annexed a list of the trees forwarded to you this spring, which please sign and return.

Yours truly,

AUG. DUPUIS,

Director.

Per A. D. V.

**Series of Questions addressed to each Manager of the Experimental
Fruit Stations**

Village des Aulnaies, 24th August, 1900.

Mr.....

Manager,

Sir,

You are requested to reply to the following questions and to forward to me at the same time your annual report on the condition of your plantation in order that I may be able to prepare my own for transmission to the Department of Agriculture at Quebec.

1. Which are the varieties of apple, plum and cherry trees that show the greatest vigor and promise the greatest success?

2. Is the weakness of certain kinds due to delay on the road from the nursery to the station?

3. Which are the weak kinds whose wood freezes?

4. Do you see any difference in vigor between the trees of the province of Quebec and those of Ontario?

5. Have not the trees sent to the stations in autumn and heeled in, a better chance of re-taking well than those taken up in the spring? Have you proof of this?

6. Do the hardy varieties which resist the cold in the climates of the districts of Montmagny, Kamouraska and Temiscouata, such as the Duchess, Tetofsky, Wealthy, Transparent of Russia, Wolfe River, Fameuse, Alexander, give satisfaction? What other varieties seem adapted to the soil and climate?

7. The same questions relative to plum and cherry trees and seedling apples?

8. Do the small fruits look well? Have you gathered any fruits this year?

Have the shelter trees planted for the protection of the orchard re-taken well?

Your obedient servant,

AUGUSTE DUPUIS, *Director.*

Gaspé Basin Fruit Station.

AUGUSTE DUPUIS, ESQ.

Director of Experimental Fruit Stations.

Paris, France.

Sir,

I transmit the report of the Experimental Fruit Station at Gaspé Basin kept by Mr W. H. Clark, which I visited on the 8th September.

I have only compliments to pay to that gentleman upon the intelligent manner in which he performs his duty : everything is in perfect order ; the weeding is well done ; there are no weeds at the foot of the trees, where the soil is kept well mellowed.

I notice that the instructions given by Mr. Dupuis relative to the pinching of the shoots of the year have been followed ; still some remain to be pinched, which will be done later (though a little late) in order to ripen the wood well, a thing of the highest importance considering the short season of vegetation in this part of the province where the heavy and late frosts of May and the early ones of September are so much to be feared.

A band of tarred paper, as recommended by Mr Dupuis, has been put around each apple tree to protect it against the attacks of the borer worm.

Four varieties of apple trees were in bearing at the time of my visit. The Transparents of Russia, which, it seems to me, fruited last year, are again in bearing ; one among others shows fifteen fine specimens ; the others seven to eight each. A Duchess has also commenced to give fruit, as well also as a Wealthy and a Whitney crab, the fruit of which, though not yet ripe, is remarkably large.

I notice that three trees planted two years ago and which looked well until lately, are on the point of drying up. I see no apparent cause for this, nothing abnormal on the trunks. I can only attribute it to the shaking of these trees by the wind, which may have broken the small hair-like radicles that form on the roots and by means of which the trees derive their nourishment, thus causing them to dry up. A circumstance

tending to confirm this suspicion is that a circular hollow was noticed by Mr. Clark around some of these trees last year.

It is absolutely necessary that trees should be planted for shelter against the wind on the north side along the public road. True, the plantation seems to be naturally protected on that side by a hill. Until now, I had thought this protection sufficient; but the heavy north wind, which blew during my visit, has shown me that it is not so. As pointed out to me by Mr. Clark, the distance between the orchard and the road being slight, to plant ash or maple trees would cause too much shade and hurt the fruit trees; I therefore suggested the planting of willow-stakes five to six feet high which, growing quickly and standing clipping well, would afford shelter to the plantation in a short time.

Some apple and plum trees, which were very vigorous last year and made a good deal of new wood, which unfortunately they could not ripen fully owing to the shortness of the season, have had a little of that wood frozen, but much less so than at the Chicoutimi Station. I attribute this difference in favor of Gaspé, as far as I can judge, either to the fact that the pinching was better attended to or that there was more snow at Gaspé. Mr. Clark tells me that to his knowledge last winter was the heaviest for snow that they have had there.

Among the apple trees which did not suffer from the frost, but which on the contrary seem more vigorous and hardy and consequently better adapted to that region, were the Red Astrakan, the white Astrakan, the Duchess, the Wealthy and the Brunswick varieties.

The three varieties of crab-apples thus far tested at this Station have also succeeded well. They are the Whitney, the Queen's Choice and the Excelsior.

The plum trees which have done best and which have suffered, either little or not at all, are: Coe's Golden Drop, Gull, St. Cloud, Pond's Seedling, Green Gage, Damson, Bonne Ste. Anne and Glass' Seedling. I regard as *nil* the damage done to these trees by the frost, as it is only the extremity of the year's shoots that have been injured.

The little Russian apple trees planted a year ago are in splendid condition and have all ripened their wood well. A few of them are dead, but I do not see any apparent cause for this, unless it be the late frosts in May and the fact that the snow disappeared from around them too early in the spring.

As for the little apple grafts set this spring, they have taken well and sent out shoots of 7 to 12 inches. I do not estimate the loss at more than 25 per cent, which, all considered, is a handsome result, some of them having dried before planting, as they could not be planted immediately on receipt owing to the fact that the plantation was still covered with snow when they came to hand.

Mr. Clark greatly regrets the loss of the Champion grape vine, which bore fruit for him last year. It had been well protected by straw litter covered with a barrel open at one end. I am strongly of opinion that it did not suffer from the cold during the winter after the precautions taken by Mr. Clark. I am rather inclined to think that it perished through excess of humidity and that it was uncovered too early this spring. The sap may possibly have started in it after a few warm, sunny days and then was suddenly checked by a heavy frost, causing death.

One thing to which I desire to draw your attention is the use of the phosphate sent by Hon. Mr. Déchène to each station in order to institute a comparison between the trees treated and those not treated with that fertilizer. At the Gaspé Station where a row was thus treated, it is very easy to distinguish it from the others, the year's shoots being much longer and the foliage much larger and of a deeper green.

There has been a very fine crop of small fruits. The Downing gooseberries were laden with beautiful fruit of remarkable size, for which Mr. Clark got 35 cents a gallon. Some bushes of these gooseberries gave him six quarts on an average or three quarts to the bush. The raspberry and currant bushes also yielded abundantly.

I think that this station will give a good impetus to fruit growing and that many of the people of the neighborhood, who until now have been afraid to make the attempt, will be induced by its example to cultivate trees acclimatized and raised in the province of Quebec, in view of their failure with those from the United States. Several have already applied to Mr. Clark, being desirous of procuring such trees and especially the varieties which succeed best.

I remain
Your obedient servant,

ALBERT D. VERREAULT.

Gaspé Village, 5th. September, 1900.

MR. AUGUSTE DUPUIS,

Director of Experimental Fruit Stations,

Village des Aulnaies.

Sir,

I have received your letter of the 24th August last, containing a certain number of questions concerning the Fruit Station under my charge, to which I reply as follows :

1. The following are the varieties which have shown the most vigor and promise the greatest success :

Apples.—Transparent of Russia, Wealthy, Red Astrakan, Ben Davis.

Plums.—Coe's Golden Drops, Green Gage, Damsen, Glass' Seedling, Bonne Ste. Anne and Willard.

Cherries.—Early Richmond, French Cherry.

2. I do not think that the weakness of some varieties should be attributed to delay on the road.

3. The varieties, which suffered somewhat from the cold, were :

Apples.—Golden Russet, Wolfe River and another winter kind.

Plums.—Smith's Orleans, St. Cloud, Pond's Seedling.

4. I have planted no trees from the province of Ontario and cannot therefore judge of the difference.

5. I received no trees in the autumn to be heeled in.

6. Duchess, Tetofsky, Wealthy and Transparent do very well. I have not succeeded with Wolfe River on the first test. Fameuse and Alexander have not yet been tested here. Ben Davis, Ontario, Astrakan and Bruns. wicker have done very well.

7. Damson, Golden Drop, Green Gage, Guji, Bonne Ste Anne and Glass Seedling succeed well.

The little seedling apples have done very well and have grown vigorously. All the Russian varieties of two years graft look well and seem very vigorous.

The little grafts planted this spring have done pretty well, the loss being light.

8. The small fruits are all doing well and bore fruit in abundance this year. The gooseberries yielded an average of three quarts to the bush, the currants two quarts and the raspberries one quart.

The trees sent and planted this spring for shelter have all taken well.

I remain, Sir,

Your obedient servant,

(Signed) WILLIAM H. CLARK.

List of Trees planted in May, 1900, at Gaspé, Quebec.

- | | | |
|---|---------------------|-------------|
| 25 Apples, assorted, 5, 6, 7 feet. | | |
| 5 Antonovka | 5 Arabka | 5 Pewaukee. |
| 5 Bottle Greening | 5 Magog Red Streak. | |
| 10 Plums, assorted, 5, 6, 7 feet. | | |
| 5 Green Gages | 5 Greely. | |
| 5 Pears | | |
| 5 Vermont Beauty. | | |
| 25 Seedling Apples, 3, 4, feet. | | |
| 25 Houghton Gooseberries. | | |
| 100 Acacias, 2, 3 feet (to make a shelter hedge). | | |

- 25 Ash-leaved maples, 3, 4 feet.
 { 20 Elms, 8, 9 feet.
 2 Horse-Chestnuts, 7 feet.
 2 Basswoods, 8, 9 feet.
 2 Silver-leaved maples, 8, 9 feet.
 (Trees for the protection of fruit plantations.)

St. Léon Fruit Station, County of Maskinongé.

VILLAGE DES AULNAIES, 12th Sept., 1900.

AUGUSTE DUPUIS, ESQ.,

Director of Fruit Stations,

Paris, France.

Sir,

After visiting the St. François and Compton Fruit Stations, I went, on the 15th August, to that at St. Léon, County of Maskinongé.

The appearance of the trees in general is very fine. A number of the apple trees had sent out shoots of 15, 18 and 20 inches. The growth of these trees is really remarkable; some of them are now eight and nine feet high and their trunks measure not less than two and a half to three inches in diameter.

I noticed that three of the Transparent of Russia apple trees are bearing fruit of remarkable size.

A part of the ground between the rows is laid down to oats and the other part is in hay. In my opinion, it would be preferable to grow vegetables or grain upon it as long as possible, that is to say, as long as it is possible to run the plough without injuring the roots of the trees.

Fifteen or twenty of the trees planted this spring did not take. Mr. Paquin attributes the cause of this to the delay on the road from the nursery to the fruit station. I do not share his opinion, at least as regards those of this year, but I am convinced that the loss of these trees is due to the fact that the soil was parched, when they were planted and that there was no rain for too long a time. The same thing occurred here, in the Village-des-Aulnaies, where several trees failed in consequence of

the drought. It was even necessary to water a number of trees which seemed backward in starting into growth. In fact, many of these trees only came into leaf in July, but have done well since, the August rains having quickened the sap. If you will recall to mind, I informed you when you were at Ottawa, of the condition of these trees and of the unfavorable weather we were having.

The cherry trees are in splendid condition and have made a good deal of wood, which explains their delay in bearing; however, according to all appearances, they should bear fruit next year. The shape and vigor of these trees are remarkable.

I observe no variety of apple tree weaker than the others, all of them having fully ripened their wood. For your satisfaction, I mention varieties which most attracted my attention and also those which I had an opportunity to examine with more facility, considering the bad weather prevailing at the time of my visit to this station; for it had rained during the night and the grain not having been harvested, it was very difficult to visit them alone. I therefore devoted myself rather to considering and comparing the different varieties one with the other and the following, among others, are the varieties which deserve special mention for their vigor and hardiness. In the first rank, I place the Wealthy, Duchess, Transparent of Russia, Red and White Astracan, Brunswicker and Longfield, and next the Ben Davis, Belle of Boskoop, Rubicon, Canada Baldwin and Salomé.

The plum trees have also done well and seem to be full of vigor, some of them showing shoots of three feet of new wood. An Imperial Gage bore some plums.

The Flemish Beauty pear trees are very vigorous. The same, however, cannot be said of the dwarf pears owing, no doubt, to their not having been earthed up high enough. Mr. Paquin will see that this is done properly.

The apple tree grafts planted this spring have also done well and are showing branches of twelve to fifteen inches; unfortunately the names of the varieties have gone astray, the children of the neighborhood having removed or mixed up the labels intended to designate each variety.

The same thing has occurred with regard to the little Russian apple trees, which are very fine-looking, but the varieties of which are not designated.

I pinched and pruned several trees, thinning out especially, the inner branches of the head, which generally is too compact, in order to admit the air and sun freely. I hope that the other trees will be subjected to the same process by the manager.

I have only met with one Imperial Gage plum tree slightly attacked with the Black Knot, which I removed, with an explanation as to the importance of at once removing and burning this fungus.

The trees have not suffered from insects and caterpillars. The gooseberry and currant bushes, however, are attacked by the caterpillars, which a spraying with Paris Green, to be given them by Mr. Paquin, will at once eradicate.

The tarred paper, which you recommended has also been placed on all the apple trees.

Several of the residents of the neighborhood, with whom I have spoken on the subject of the culture of fruit trees in general and those of the St. Leon Station in particular, are genuinely astonished at the success of the plantations which were deemed to be impracticable in Maskinongé and its environs after various unsuccessful attempts on their own part to grow them. It appears that they purchased from Western nursery agents trees of varieties that were often too tender for our climate and that froze during the first winter; or, possessing no knowledge of fruit tree culture and receiving no instructions as to how such trees should be planted, dug a hole mechanically in the handiest place, without an eye to the drainage or the condition of the soil. The tree, thus badly planted to begin with, was left to itself, received no protection during the winter, and died at once or dragged on a weakly existence. It is now beginning to be understood that success in tree culture is easy when certain precautions are taken and, above all, when the varieties which succeed well at the experimental station are selected.

I mention the observations of these persons and especially of the

one who drove me to Mr. Paquin's, in order to show that the establishment of these fruit stations is commencing to be appreciated.

Mr. Paquin should take the same care of the trees this autumn as in previous years, that is to say, he should put down and attach small firs or spruces to each of the trees and then spread a good layer of manure at the foot of each to protect them against the severe cold snaps.

Your obedient servant,

ALBERT D. VERREAULT.

ST. LÉON, 4th September, 1900.

MR. AUGUSTE DUPUIS,

Director of Fruit Stations,

Village-des-Aulnaies.

Sir,

I have received your letter of the 25th August last.

1. To the first question, I may state that in general all the trees planted here seem to me to be as vigorous the one as the other.

2. To the second question, I have remarked that, as a matter of fact, the trees must have suffered on the way, as of the 75 received this spring (including the little seedling apples) 20 have died in spite of all the care that I gave them.

3. The frost did no damage to the trees.

4. As far as I can see, there is no difference between the trees from the province of Quebec and those from the province of Ontario.

5. As I have not yet done any autumn planting, I cannot say whether planting at that season is better than in spring.

6. ?

7. ?

8. The small fruits are very fine and yielded heavily this year.

I have received some Transparent and Wealthy apples. In general the apple trees are fine and seem to be very vigorous. I have no hesitation in saying that all the varieties which I have received and planted will succeed if the trouble requisite to assure success is taken. Let me add that I shall be glad to have a visit from you here, for I think I have a very fine experimental station, which has already demonstrated that fruit culture can be profitably carried in this part of the Province.

Your obedient servant,

(Signed) HORMIDAS PAQUIN.

List of Trees planted in May, 1900, at St. Léon, County of Maskinongé.

May, 1900.

42 Apple Trees (12 of which were to replace others) :

5 Arabka.—5 Antonovka.—5 Pewaukee.—5 Magog Red S.

5 Bottle Greening.—8 Scott's Winter.—3 Wealthy.

3 Alexander.—3 Tetofsky.

15 Plum Trees (5 of which were to replace others) :

7 Golden Drop.—5 Greeley.—3 Bradshaw.

25 Seedling apple trees.

25 Houghton Gooseberry plants.

100 Acacias to make a shelter hedge.

24 Elms, 8-9 feet.

20 Silver-leaved Maples.

(Trees for the protection of fruit plantations)—1 box.

Chicoutimi Fruit Station.

Village-des-Aulnaies, 30th August, 1900.

AUGUSTE DUPUIS, EQR.

Director of Experimental Fruit Stations,

Paris, France.

Sir,

The Chicoutimi Station (kept by Mr. George Hudon) was visited on the 30th August after that at Waterloo.

I was very sorry that I did not meet that gentleman, who was absent at the time and, as my time was limited and I could not await his return, I visited the plantation myself and left for him in writing the few observations to which I desired to draw his attention.

I regret to note that a certain number of the apple, plum and pear trees, which had such a fine appearance last year (at the time of my visit) have failed. The few apple and plums upon which I noticed fruit buds last year unfortunately did not develop them. I ascribe this to two causes, either to the pinching, which if done, was done too late, or to the too early removal of the little fir bushes which are supposed to be put down every fall before the hard frosts. The trees suffered in no way at the roots, for, with the exception of three or four, all the others have sent up suckers of 2 or 3 feet since the spring.

The Wealthy apple, which is one of the hardiest varieties and which has succeeded splendidly wherever it has been tried, perished this year. I do not regard this test as conclusive and think that these trees, which were nearly 7 feet high when they were planted, were too old to be able to determine their hardiness in this cold Chicoutimi region. I therefore take the liberty of suggesting that you should try plants of this Wealthy variety, only 3 to 4 feet high, at the most. Indeed, I believe that this suggestion may also apply to all the trees intended for this station. I noticed upon the four Wealthy trees which succumbed and which adjoin

each other in the same row, a slight scratched wound of 12 to 15 inches on the trunk, running in the direction of its length, from the south-west side to north.

Some Lombard and Bradshaw plum trees, planted near the fence, have failed, while others set nearer to the centre of the plantation have resisted. I say "failed", when I should say "failed in part", for, just like the apple trees, their roots have not suffered. After their pruning in the spring by Mr. Hudon, they all put forth long branches and formed a fine head. I am convinced that, as in the case of the apple trees, the same cause applies to the plum trees, that is to say, defect in the pinching, which was, perhaps, performed too late, or premature removal of the protecting fir trees.

The following are the names of some of the trees, whose branches suffered from the frost, but whose roots have sustained no damage and which, on the contrary, sent out good, strong shoots at the head this summer, which I have pinched, although the season was a little advanced for that operation :

Plum Trees—Lombard, Bradshaw, Guai, Prince of Wales, Beauty of Naples.

Apple Trees—Ontario, White Astracan, Golden Russet, Rubicon.

Pear Trees:—Louise Bonne, Flemish Beauty.

The Richmond and Montmorency cherry trees have suffered somewhat from the cold ; still, they are fine looking and had well formed their heads at the time of my visit.

The little Russian apple trees planted last year are in excellent condition. They have made shoots of two feet and over and appear to be very vigorous. I think that they will be a real success at Chicoutimi and will do credit to their cold mother country, *Russia*.

The German Prune plum trees have failed completely. Thus far, I consider this variety "not hardy", judging from the trial which I made of it in every orchard at the Village-des-Aulnaies where I subjected it to severe pinching back in order to let it ripen its wood ; but in spite of all this, the tree is sickly.

Of two Glass Seedling plum trees, one is dead without apparent cause, but the other is in fine condition and full of vigor. The Willards (plum) have made shoots of 18 to 20 inches long, although a part of the new wood was frozen.

The Bethel, Ben Davis, Duchess, Transparent of Russia, Brunswicker and Peach apple trees are the ones which have succeeded best ; they are very handsome and vigorous and have well ripened their wood. These varieties are close to a thick hedge of raspberry bushes which collected the snow earlier in the fall and in greater quantity, while the Wealthy trees, mentioned in this report, being too far away from this hedge, did not get the benefit of it. I was forgetting to mention that the Stark apple trees have done well and grown vigorously.

The gooseberries, currants, raspberries and strawberries are doing very well and have yielded plenty of fruit. There was still fruit on the strawberries at the time of my visit on the 30th August.

The little grafts sent this spring have grown well ; the loss amongst them is not great, being about 20 per cent.

Of all the trees sent this spring only one apple tree missed—a McIntosh Red.

The maples and elms planted this spring to shelter the plantation have all, with the exception of one maple, taken exceedingly well.

I have no doubt that the trees planted for shelter will have a marked effect after three or four years of growth. In the meantime, I am satisfied that it would be advantageous to plant other hedges, either of gooseberries, currants or raspberries between the fruit trees at every second row in order to catch and retain the snow.

I have the honor to be,

Your obedient servant,

ALBERT D. VERREAULT.

**Report on the state of the fruit trees at the Experimental Station of
Ste-Anne de Chicoutimi**

Ste Anne de Chicoutimi, 10 Sept. 1900.

1. The varieties of apple trees which have displayed the greatest, vigor and which have the most chance of success are : The Peach, Duchess, Bethel and Transparent of Russia.

2. The trees do not appear to have suffered on the way.

3. The varieties of apple trees, whose wood freezes, are : The Rubicon, Golden Russet and Ontario.

Plum Trees. The Bradshaw and Willard.

Cherry Trees. The Early Richmond.

The difference is not much, I think, but those of the Province of Quebec seem to be the hardier.

5. I cannot answer this question, as I have received none this year.

6. Some of the cherry and plum trees suffered this winter.

7. The seedling apples have done very well and have a fine appearance.

8. The small fruits were plentiful and very fine. All the trees planted to shelter the orchard are all very fine also.

I have the honor to be,

Sir,

Your obedient servant.

(Signed) GEORGE HUDON.

List of Trees planted at Chicoutimi in May, 1900.

22nd May, 1900.

- | | | |
|--|---------------------|-------------|
| 80 Apple trees, 5-6-7 feet : | | |
| 5 McIntosh Red, | 5 Arabka, | 5 Pewaukee, |
| 5 Antonovka, | 5 Magog Red Streak, | |
| 5 Bottle Greening. | | |
| 17 Plum trees, 5-6-7 feet : | | |
| 3 Golden Drop, | 3 Green Gage, | 3 Guai, |
| 5 Greeley, | 3 Lombard. | |
| 25 Apple Seedlings. | | |
| 50 Ash-leaved maples. | | |
| 25 Houghton gooseberry bushes. | | |
| 3 Pear trees Vermont Beauty. | | |
| 200 Williams Strawberry plants. | | |
| 20 Elms 8-9 feet. | | |
| 20 Silver-leaved Maples 9-10 feet (for shelter). | | |
| 100 Acacias (for shelter hedge). | | |
-

Experimental Fruit Station at St. François, Beauce.

Village-des-Aulnaies, 2nd Sept., 1900.

AUGUSTE DUPUIS, Esq.

Director of Experimental Fruit Stations,

Paris, France.

Sir,

All the trees of this spring's planting have taken well and made long shoots. I remark, among others, the Lombard and Bradshaw plums, which have sent out shoots of 3 feet and upwards. Among the apples, which are most noteworthy for their vigor, are the Wealthy, Ben Davis, Duchess and Transparent of Russia. Several of these apple trees will come into bearing next year, judging from their present appearance.

The Mann, White Astracan and a couple of other varieties, whose names escape my memory, do not display quite as much vigor, but are still very fine.

With the exception of a couple of varieties, all the plum trees have prospered remarkably.

The pear-trees are also very vigorous and handsome.

The strawberries have yielded a fine crop of good, handsome fruit, while the gooseberry bushes and the raspberries are loaded with fruit. Most of the raspberries planted this spring bore fruit abundantly, that is for young plants.

The caterpillars were beginning to show themselves on the gooseberries and currants. I called the attention of the Revd. Brother, accompanying me, to the fact and he was to have them sprayed with Paris Green with the aid of the pulverizer.

The fruit trees have not suffered from insects except from the little plant-lice with which a few apple trees were infested and which I destroyed by pinching and pruning all the trees in the plantation. I also removed all the suckers and thinned out the heads of all the trees, which were too thick, in order to admit the sunshine more freely.

All the elms planted for the protection of the orchard have taken, as also the maples (red maple) with two exceptions.

The little acacias planted to form a hedge in order to catch the snow, have pretty well taken, but a few have missed. These acacias have been planted too far apart and others should be put down to form a thicker hedge. Instructions had been given as to the way to plant these acacias, but they were received too late to be observed.

I note that not a single tree suffered damage from the frost. All, without exception, have very well ripened their wood.

I notice that the grass is allowed to grow in the orchard. Certainly, the soil should be cultivated for a few years and the grass especially removed from the foot of the trees. I think it would be desirable to bring this point to the attention of Reverend Brother Joseph Armand, the present manager, who replaces Reverend Brother Jordanus and who is well disposed to follow any instructions you may give him. •

According to your instructions, a collar of tarred paper has been put around the foot of each apple-tree, but much too high, for it does not protect the essential part. I showed how it should be placed, which will be done at once.

In concluding this report, I am not afraid to say that the station at St François, Beauce, is a real success, thus far at least, and the fact that not a single tree has failed and that all have stood the winter without accident proves this pretty well.

I remain,

Your obedient servant.

ALBERT D. VERREAULT.

Commercial College of the Marist Brothers.

ST. FRANÇOIS, BEAUCE, 31st August, 1900.

MR. AUGUSTE DUPUIS,

Village-des-Aulnaies,

Dear Sir,

Notwithstanding all my good will, I could not make this report sooner. In view of the fact that Brother Jordanus had been changed from here, I had first, before preparing it, to acquaint myself with the condition of our orchard.

The report hereto appended is certainly incomplete, but you will be pleased to make allowance for the lack of time at my disposal and my want of experience in such matters.

Any observations you may deem it advisable to make will be received with pleasure and gratitude.

I hope that your kindness to my predecessor will be continued to me

Your obedient servant.

BROTHER JOSEPH ARMAND.

Manager.

Report on the State of the Trees at the St. François de Beauce Fruit Station under the management of the Marist Brothers.

1. Generally speaking, the apple trees have done well thus far. The Jumbo and White Astracan, however, do not seem to be as vigorous as the others. The plum trees, with the exception of Glass Seedling and some small plum trees from Mr. Brodie, look well.

The cherry trees are getting on relatively well.

2. According to our orchard man, the weakness of certain varieties is largely due to the bad weather we had in May.

3. We have not yet noted any trees whose wood freezes. None of them suffered from the severity of the winter. They had been surrounded by a light layer of manure. I think that in future the sward will protect them sufficiently from the cold.

4. ?

5. ?

6. ?

7. ?

8. The small fruits such as raspberries, gooseberries, currants and strawberries yielded an abundance of fruit, considering their age.

The trees planted for the protection of the orchard are succeeding wonderfully. A large number of the little acacia plants, however, have perished and should be replaced.

I am of opinion that the ground to the west of the orchard is not very favorable to tree planting, as it is impossible to drain it. If you see no objection, a row of trees, which you suggest, might be put around the garden, which lies to the east of the orchard. We propose to lay it out regularly next year, which would be a good time, I think, for the purpose. The soil moreover is good and has been worked. I leave, however, the decision of this matter to yourself.

Your obedient servant,

(Signed) BROTHER JOSEPH-ARMAND,
Manager.

List of Trees planted at the St. François Station in May, 1900.

May 21st, 1900.

- 14 Assorted Cherry trees of 5-6 feet :
 - 7 Montmorency.—7 Early Richmond.
 - 86 Assorted Currant Bushes :
 - 40 Lee's Prolific.—10 Black Naples.
 - 6 Fay's Prolific.—30 White Grape.
 - 150 Gooseberry Bushes :
 - 125 Downing.—25 Houghton.
 - 100 Williams Strawberry plants.
 - 100 Acacias (to make a shelter hedge)
 - 22 Elms, 8-9 feet.
 - 20 Silver-leaved Maples, 8-9 feet.
 - 10 Carolina Poplars, 9-10 feet.
 - 6 Weeping Birches, 8-9 feet.
 - 2 Horse Chestnuts, 6-7 feet.
 - 2 Basswoods, 8-9 feet.
-

Compton Experimental Fruit Station.

Village des Aulnaies, 15th August, 1900.

AUGUSTE DUPUIS, ESQ.,

Director of Fruit Stations,

Paris, France.

Sir,

After visiting the fruit Station at St François, Beauce, and acquainting you by report with the state of the plantation there, I proceeded to the Compton Farm, where is the fruit Station, of which Mr. John M. Lemoyne is manager. I met that gentleman out walking but he at once accompanied me in my visit to his fine plantation, which is unquestionably one of the best kept in every respect.

Everything is in perfect order, the printed boards, designating each variety, are all in their respective places, and every visitor can thus judge for himself of the vigor of one variety compared with another.

The pruning has also been done with care and the branches having been removed from as near the trunk as possible, the wounds heal up in a short time, while, if the pruning of the branch to be removed is done too far from the trunk, a stump remains, which dries up and the removal of this stump (which must be effected sooner or later) leaves a wound which does not heal or heals very badly.

I make this remark because I have noted this defect at a couple of stations. I wish therefore to draw the attention of the managers to this important point and they have promised to look after it in future.

As regards the pinching of the year's shoots and especially those which are pushing forward too much. Mr. LeMoyne should see to it that it is done at once.

The apple, plum and cherry trees are in fine order and have grown vigorously ; the foliage is large and of a deep green, which is a proof that they are healthy. All these trees have done well, except 11 plum trees

which missed. The other plums, however, seem to be full of vigor and I remark among others, which have put out shoots of 30 to 30 inches this year, the Moore's Arctic, Guui, Stanton, &c.

It is hard to account for the loss of some of the plum trees, unless it can be ascribed, as Mr. LeMoynes told me, to the fact that the ground in which the trees were planted had not been worked before. This would seem to me to be a sufficient cause and what tends to confirm this supposition is that, out of nearly the same number of trees planted last year in soil which had been well cultivated, the loss only amounted to three or four. But, above all, we must not forget that when the trees were sent to the stations last May, we had a pretty prolonged drought and it can be easily understood that trees planted during a drought, if it be at all prolonged, run more risk than those planted a year or more under good conditions as the tree, having formed roots, will suffer less.

I notice for the first time that the Alexandér apple trees have excelled themselves in fruiting this year at Compton before the Yellow Transparents of Russia, which, as a general rule, are the first to come into bearing. If no accident should happen to the latter, they should bear next year, as they are loaded with fruit buds, which is also the case with the Duchess, the Wealthy and some other varieties.

The cherry trees have grown vigorously, but have not fruited this year, at which I am not surprised after so much growth, for they have made a great deal of wood. These, according to appearance, should also bear next year.

I regret to report the loss of four plum trees coming from Mr. Charles Baltet, of Troyes, France, purchased for the experimental stations by Hon. F. G. M. Déchène. Two of the six sent have proved hardy and are very handsome and vigorous. These are one Mirabelle and one St. Catherine. The loss of these trees must be attributed to the fact that they were planted and transplanted in two consecutive years.

The apple grafts planted three years ago are now 5 to 6 feet high and will serve to replace certain varieties that have missed. Those planted

this spring have succeeded well and I do not think that the loss will be much more than a quarter per cent. Mr. LeMoyne has taken the precaution to place little pickets with the names of each variety, pending the arrival of the printed boards.

The maple seed sent by Hon. Mr. Déchène, Commissioner of Agriculture, in August, 1899, has come up well and now forms pretty little plants of 18 to 20 inches high, straight and well branched.

I am pleased to report that the 64 silver-leaved maples planted this spring to protect the plantation against the wind have all well taken, without a single exception.

The little acacia plants to form a hedge, in order to collect the snow early, have, with a few exceptions, well taken.

The crop of small fruits, such as strawberries, raspberries, gooseberries and currants, has been abundant.

Notwithstanding the frequent rains in the course of July, the plantation was well kept up by frequent hoeing.

I cannot close this report without mentioning the hay crop, which has been saved in good condition and which is enormous. The barn is crowded and Mr. LeMoyne does not well know where to put the grain, which is also fine and abundant.

I have the honor to be,

Your obedient servant,

ALBERT D. VERREAULT.

Report of the Compton Experimental Fruit Station.

COMPTON, 24th August, 1900.

AUGUSTE DUPUIS, Esq.,

Director of Experimental Fruit Stations,

Village des Aulnaies.

Sir,

I beg to submit the annual report of this station.

On the receipt of your message, in January last, I spread a good coat of manure over the roots of all the trees and this spring I incorporated this manure with the soil around the trees where it was spread.

The apple trees have done well and two of the Alexanders have borne fruit.

The cherry trees have also done well, but have not yet fruited.

The plum trees seem to be growing vigorously, but I am sorry to say that I have lost some of them without apparent cause. One or two were attacked with the black-knot, which I removed and burned.

The strawberry plants have done remarkably well and bore an abundance of very large fruit ; but unfortunately the rainy weather in July last made it tender and watery.

The red and white currants also gave a good crop of fine fruit ; but, like the strawberries, this fruit also suffered from the rain.

According to all appearances, the apple, plum and cherry trees will come into bearing next year.

The constant rain we have had has almost rendered impossible the cleaning out of the weeds this summer.

The few Russian apple trees which you sent me this spring have all, with one or two exceptions, well taken, but their growth is slow.

Pursuant to your instructions, I have had a strong wire fence put up on the eastern side of the orchard and now I have a solid fence all around it. I have also planted 64 red maples to protect the plantation against the winds and have not lost one of them.

The little acacia plants sent me are also thriving.

The little apple grafts sent me last spring were planted according to your instructions. They have done well. I do not think that the loss amounts to more than one third ; the survivors are very fine.

The red maple seed sent in August, 1899, was also sown in the manner indicated and I have now a lot of fine young plants, some of which measure two feet high. I put little fir trees around them as a shelter last fall, which had the effect of collecting the snow and protecting them. They will make a splendid lot of plants for transplanting later.

I employ all my available time in the plantation, doing most of the pruning myself. A gardener would be of great help to us.

Yours truly,

(Signed) JOHN M. LEMOYNE,

Manager Compton Ex. Station.

COMPTON, 30th August, 1900.

MR. AUGUSTE DUPUIS,

Director of Experimental Fruit Stations,

Village des Aulnaies.

Sir,

I append the answers to the series of questions which you have sent me :

I. The apple, plum and cherry trees, which show the most vigor and promise to be the most successful are: The Alexander, Transparent of Russia, Duchess, Wealthy, Baxter, Salomé and Tetofsky.

Cherry Trees: Early Richmond, De France and Dye House.

Plum Trees: St. Catherine, Imperial Gage, Guili, Moore's Arctic, Dawson and Stanton.

2. I have no doubt that the weakness of certain varieties depends upon the more or less distance from which they come and the mode of packing them. Still I would not like to say that all the varieties are equally affected.

3. All the apple trees are most vigorous. The variety of plum tree that seems to be the weakest and whose wood has frozen is the Shipper's Pride.

4. I have found the trees from the province of Quebec more vigorous and of better shape than those from Ontario.

5. The hardy varieties such as the Duchess, Tetofsky, Wealthy, Transparent of Russia, Alexander, have done very well here. The Baxter, the Salomé and the Russian varieties seem also very well suited to our soil and climate.

6. The cherry and plum trees mentioned in question "1" are the best varieties that I have cultivated here

7. The small fruits, such as the Sharpless and Williams strawberries, have done remarkably well and yielded plenty of fruit; so also have the raspberries, including the Red Cuthbert. My white raspberries only produce a very small fruit.

The white and red currants have yielded an abundance of fruit this season, especially the White Grape currant. The Downing gooseberries have also given a good crop. The plants of the Industry gooseberry have not done as well as I would like. They were only planted last spring and I have lost some of them.

The trees sent for protection purposes have also, without exception, done very well and will be an ornament to the place.

Yours respectfully,

JOHN M. LEMOYNE.

List of Trees planted at the Compton Station in May, 1900.

2nd May, 1900—64 Silver-leaved maples, 8-9 feet (shelter trees for plantation).

300 Sharpless Strawberries.

300 Wilson's “

2nd May, 1900—25 Gooseberries :

15 Industry, 10 Crown Bob.

9th May, 1900—1 Russian Poplar, 12 to 15 feet.

1 Basswood.

16th May, 1900—250 Acacias (for shelter hedge).

20 Apple Trees : 5 Antonovka, 5 Arabka, 5 Magog Red Streak.

5 Bottle Greening.

25 Apple Seedlings, 3-4 feet.

Waterloo Experimental Fruit Station

AUGUSTE DUPUIS, ESQR

Director of Experimental Fruit Stations,

Paris, France.

Sir,

I have the honor to submit the report of the fruit station established at Waterloo this year under the management of Mr. H. N. Whitcomb.

There were already several varieties of apple trees in the orchard, and these are covered with fine fruit. Among the trees in bearing, I note the Fameuse, Duchess, Wealthy, Tetofsky and the Yellow Transparent of Russia, &c, which are all handsome trees, well formed and in bearing for some years.

These trees were all sprayed with the Bordeaux mixture by means of a powerful pump owned by Mr Whitcomb ; the result being that the Fameuse, so liable to spot, are little or not spotted and very few of the apples are attacked by the worms.

The spring plantation looks very well ; the land which had been previously sown and which is very rich, was in good condition to receive the trees, which have all well taken, with the exception of three apple and five cherry trees, ten gooseberry bushes and four vines. Mr. Whitcomb attributes the loss of these to the carelessness of the agent who supplied them : several of the trees having their roots torn and others the bark gone : I may remark that these trees did not come from the Village des Aulnaies' nursery.

The land between the rows of trees is seeded to oats, which are very fine. I strongly advise continuing to cultivate the land as long as possible in order to prevent the grass growing. The other part of the ground, which is intended for planting next spring, is also sown to oats and will be in good condition for such planting.

All the trees, apple, plum, cherry and pear, have done very well and seem without exception to be most vigorous. It is really surprising to see how much wood they have made during the first year. I hope that the manager will, as I have recommended, take all the precautions possible to protect the roots and heads of the trees this fall by earthing up the trees and giving them at the foot a good coat of fresh manure to protect the roots and, to protect the branches, by placing two bushy fir trees to the east and west of each tree.

The trees should also be pinched. I have also recommended a collar of tarred paper at the foot of the apple trees, after first examining and destroying any borer worms which may have got in.

The gooseberry plants have all well taken and are very vigorous, 5 or 6 only in 34 having missed. The same remarks apply to the currants, only 4 of which in 30 did not take.

The grape vines have also grown vigorously. Only 4 in 25 have failed.

The little printed boards sent by you to designate the varieties have been put up.

There is not much to be said thus far about this new station, before knowing how the trees will turn out this winter.

Your obedient servant,

ALBERT D. VERREAULT.

Report of the Manager of the Waterloo Station.

Waterloo, Sept., 1900.

MR. AUGUSTE DUPUIS,

Director of Fruit Stations,

Village-des-Aulnaies.

Sir,

I beg to submit the annual report of the Experimental Fruit Station of Waterloo, District of Bedford, established in May, 1900.

Four months have hardly elapsed since the establishment of this station, which renders it difficult to supply a very accurate report in regard to the condition of the trees planted this spring. Nevertheless, I reply as follows to the different questions contained in your letter of the 24th August last :

1. The following varieties of apple trees are vigorous and promise to be really successful : Yellow Transparent, Tetofsky, Duchess, Alexander, Wealthy, Ben Davis, Hurlbert, St. Lawrence, Rox-Russett, Lang-

field, Wolfe River, Ontario, Baxter, Sutton Beauty, Mammoth Pippin, Grimes Golden, and Arkansas Beauty.

Plum Trees.—Shipper's Pride, Pond's Seedling, Bradshaw, Yellow Egg, and Moore's Arctic.

Cherry Trees.—Early Richmond, French Cherry.

Pear Trees.—Clapp's Favorite.

2. The weaknesses of certain varieties is above all caused by want of care in taking up the trees, in my opinion, judging from the condition of the consignment from a Stanstead nursery.

3. The varieties which seem to be the weakest are the Golden Russet and Arabka ; but, as already said, I attribute this to the want of care in taking up these trees. At the time of planting, I greatly feared that some of them would not take, which had their roots torn, etc.

4. Our station has received no trees from Ontario, so that I cannot judge of the difference between them and those from the province of Quebec.

5. The different hardy varieties which you mention and which are grown in the districts of the province of Quebec, such as the Duchess, Tetofsky. Wealthy, Transparent, Wolfe River, Fameuse, Alexander, succeed very well here. And, in addition to these varieties, I would recommend the Fall Pippin, Red Beitheimer, as an autumn apple. And for winter apples: Northern Spy, Bottle Greening, Cooper Market, Fallawarer, Mann, Salomé, Nod Head.

6. Among the cherry trees, Early Richmond appears to be the most hardy and vigorous and well suited to our severe winters. It ripens in June. Louis Philippe is also very hardy. Mayflower and Late Duke are also good varieties.

Plum Trees. The following varieties are hardy and productive: St Cloud or Quackenboss, Shipper's Pride, Burbank, Moore's Arctic and Duane's Purple.

I have no apple seedlings, but I would recommend seedlings of the Baxter apple.

7. The appearance of the small fruits is excellent. The gooseberries and raspberries are doing exceedingly well ; they have grown wonderfully for their first year since planting and promise an abundance of fruit next year. The grape vines are doing far better than I dared hope when they were planted. Only 4 out of 25 have missed.

With respect to the planting of shelter trees for the orchard. I may state that when the plan for the enlargement of the station will have been completed (if deemed necessary) I shall at once see that the orchard is well protected. In the meantime my intention is to erect a fence to collect the snow. Moreover, I am not prepared to acknowledge that trees for the protection of orchards are preferable to snow fences. I have had a little experience in the planting of such trees for protection, which I had afterwards to remove because they had been planted too close, thus causing the snow to accumulate too abundantly and over too large an area, whereby serious damage was occasioned to the fruit trees through the smashing of their branches. Unless the shelter trees be planted at a pretty considerable distance off, not only in order that the snow may collect less, but also that the shade cast by such trees later on, when they have reached their full growth, shall hurt neither the growth nor the ripening of the fruits, I do not regard such planting as advisable.

I am aware, however, that opinions are divided on this head.

To complete and close my report, I beg to state that,

Of a total of 44 apple trees,	41 are doing very well and 3 are dead.
“ 34 plum “	32 “ 2 “
“ 12 cherry “	7 “ 5 “
“ 30 currant bushes	26 “ 4 “
“ 30 gooseberry “	28 “ 6 “
“ 25 vines “	21 “ 4 “

I remain,

Your obedient servant.

(Signed) H. N. WHITCOMB.

Manager.

REPORT OF THE AGRICULTURAL MERIT COMPETITION FOR THE YEAR 1900.

TO THE HONORABLE COMMISSIONER OF AGRICULTURE,
Quebec.

Sir,

The undersigned have the honor to transmit you their report of the Agricultural Merit Competition for the current year, with the hope that you will be pleased to receive it favorably.

Respectfully submitted,

THOMAS DRYSDALE,
JOSEPH DELAND,
ARSENE DENIS,

Judges of Agricultural Merit.

Montreal, 17th November, 1900.

AGRICULTURAL MERIT COMPETITION OF 1900.

COMPETITORS FOR THE GOLD MEDAL.

No.	NAMES.	RESIDENCE.	DATE OF VISIT.	POINTS
				AWARDED.
1	W. W. Ogilvie	Lachine Rapids.....	July 23-24	98.45
2	John Nesbitt	Petite Côte, H.....	" 21	91.50
3	J. A. Chauret	Ste-Geneviève, J.-C.....	" 24-25	89.25
4	Damien Pilon.....	St-Benoit, D.-M.....	" 20	87.25
5	Ste-Thérèse Seminary	Ste-Thérèse.....	" 31	85.75
6	Ovide Valiquette	Terrebonne.....	" 14	85.50

COMPETITORS FOR THE SILVER MEDAL.

No.	New.	Old.	NAMES.	RESIDENCE.	DATE OF VISIT.	Points awarded	V. G. M. SILVER MEDAL.	G. M. BRONZE MEDAL.	M. DIPLOMA.
1	1	.....	Robt. Reford.....	Ste-Anne de Bellevue.	July	27-28	68.10	1	.....
2	1	.....	Benj. Bertrand.....	St-Hermas D. M.....	"	20-21	85.25	1	.....
3	.....	1	Horm. Hotte.....	St-Martin, L.....	"	12	85.15	1	.....
4	1	.....	J. O. Levas.....	Pontchâteau, S.....	"	25	85.15	1	.....
5	1	.....	Nap. Huot.....	St-Canut, D. M.....	August	1	85.05	1	.....
6	1	.....	Adolp. Ouimette.....	St-Frs. de Sales L.....	July	13	83.00	.....	1
7	1	.....	Alph. Angrignon.....	St-Benoit, D. M.....	"	19	77.15	.....	1
8	1	.....	Mathias Ménard.....	Ste-Marguerite, T.....	August	2	75.80	.....	1
9	.....	1	Walter Smith.....	St-Jérusalem.....	July	17	75.85	.....	1
10	1	.....	Jos. Maillé.....	Ste-Marguerite, T.....	August	10	75.35	.....	1
11	1	.....	Lamb. Beauchamp.....	ibid.	"	11	75.00	.....	1
12	1	.....	Peter Cheffer.....	ibid.	"	9	72.00	.....	1
13	1	.....	Ovide Charrette.....	ibid.	"	3	71.90	.....	1
14	1	.....	Raoul Charrette.....	ibid.	"	9	71.10	.....	1
15	1	.....	Orphyr Lalonde.....	Rigaud, V.....	July	26	69.65	.....	1
16	1	.....	Jos Brisebois.....	Ste-Marguerite, T.....	August	8	68.70	.....	1
17	1	.....	John Pearce.....	ibid.	"	"	67.25	.....	1
18	1	.....	Emery Laforest.....	ibid.	"	4	53.05	.....	.....
	16	2						5	6 6

This competition took place for the third time in the region comprising the counties of Jacques-Cartier, Laval, Two-Mountains, Soulanges, Vaudreuil and part of the counties of Argenteuil and Terrebonne. We regret that, in this fine region, where there is a very large number of good farmers, the competitors were not more numerous. Only twenty-four entered for the competition, of whom six were for the gold medal, having already won the silver medal in a previous competition, while sixteen new men, of whom two had already carried off a bronze medal, again competed for the silver medal; so that it is rather difficult for the commission to precisely estimate the amount of progress achieved in this region since the last competition. It should not be judged, however, by the number of points awarded as compared with the scale of the former commission. We have been a little more severe in our appreciation of the details of the system of farming followed and of the state of the crops, basing ourselves on the nature of the localities and the soil and on the economic possibility of the latter's production.

For the dates of the visits to the farms, the names of the competitors and the order and number of points awarded, reference should be had to the above tables.

In order not to burthen the present report with useless or unimportant details, involving no interest or instruction for the agricultural class, we confine ourselves to relating, with regard to the matters observed, the more important points which carry with them interesting and useful information. This is why, in order to attract public attention and assure intelligent comprehension of the subjects, we have deemed it advisable to call in the services of an artist to take photographs and draw sketches of certain farms and buildings which seemed to us to present a more noteworthy interest.

Treatment of the Soil.—Generally speaking, we can congratulate the competitors upon the quality of their farm-work such as ploughing, harrowing, size and shape of the ridges, furrows, &c.

Still, on some good farms, we have noticed ridges that were too rounded, furrows that were not cleared out, ploughings that were too superficial and have adjudged that these, according to the case, were accountable for a diminution of 10 to 25 per cent in the yield.

The perfect treatment of the soil and especially of the subsoil and a regular and rational rotation of crops are, in general, one of the weak points noted on the majority of the farms inspected.

The quality and abundance of the pasturage, with about four or five exceptions, leave much to be desired, notwithstanding the favorable season for grass, seeing that the grass crop, under actual circumstances, is the most economical and profitable, but unfortunately the one that is still too neglected in this country.

The farm buildings of the majority of the competitors were also not up to the mark as regards convenience of service, the economical feeding of the stock and the comfort of the latter. There is still room for much progress in this direction, but it will be readily understood that, in order merely to gain a few points, a farmer should not pull down stables that

are still solid and durable, to build new and improved ones more in keeping with actual wants. Nevertheless, we are of opinion that some of them would spend money to advantage in remodelling to some slight extent their old buildings, making them warmer and better lighted and providing them with a better ventilation, together with a better and more economical arrangement of the whole.

In the case of several of the competitors, the stock might be better. There has been progress apparently, but more is needed. A better quality of cattle would increase the profits. In general, this important point is still too much neglected in the working of farms.

The pigs and sheep appeared to us to be in general comparatively better than the cattle. The horses may be good enough for farm work, but, if they were in general better, they would enhance the farm's sources of revenue, as they have risen in price within a couple of years past.

Some of the competitors have gone successfully into poultry raising, the rearing of choice breeds and the production of eggs; but this specialty, which is generally regarded as paying, is not yet sufficiently cultivated. The majority of the poultry yards and houses visited by us are not yet up to the mark; some of the competitors having no special place for their hens, &c, and wintering them in the stable or the sheepfold. Apiculture carried on intelligently and profitably, as well as domestic industry, was not overlooked in our visits. On the farms, where the female personnel is numerous enough and where this industry is prosecuted with remarkable utility and art, we have awarded a fraction of a point for the greatest successes in this branch of rural economy, in order to give it all the encouragement it deserves. We are of opinion that domestic industry is still a real aid to large and hard-working families. The table of points indicates the most meritorious competitors in this as in other respects

We now beg to note for the sake of the instruction they may impart and the interest which they possess for the entire farming class, the methods of cultivation, the improvements and the success of some of the competitors.

W. W. OGILVIE (98-45 PTS GOLD MEDAL)

The Ogilvie farm, situated opposite the Lachine Rapids, is an artistic transformation by the great mill owner suddenly carried off not long since by the hand of death, of the farm of the Somervilles, formerly noted breeders of Ayrshire cattle and one of whom was long a member of the Council of Agriculture of the Province of Quebec.

The soil of this farm is rather light than clayey, fairly substantial and of good texture, especially in the lower part; but it is somewhat uneven principally in the upper part, some of which has not been yet improved, being covered with rocks, partly wooded, and full of hills and hollows. The land seems of good mineral composition and sufficiently calcareous like all that part of the Island of Montreal. The hollows are rich in humus, but wet. At certain higher spots, the subjacent rock is near the surface and the soil lacks sufficient depth to assure an abundant yield every year. The higher parts are of drier yellow earth and rocky. It is ground difficult to drain and calling for organic manures in its salient parts.

Mr. Hunter, an experienced Scotch agriculturist, who only came to this country a few years ago, was prompt to thoroughly understand the requirements of this soil and the improvements necessary to derive from it the abundant products needed for the support of a heavy stock of choice cattle.

At the first glance, Mr. Hunter perceived that, apart from regular division and convenient arrangement of the fields, what it needed was stoning, levelling, draining and manuring and to carry out this work, he applied himself with an amount of perfection and success, which reflects honor both upon himself and the proprietor.

The drainage, composed in great part of clay pipes and the remainder of stone removed from the surface of the soil, works to perfection and none of the low grounds were suffering from wet, notwithstanding the abundant rains of the period (July).

The proximity of such centres of population as Lachine, Verdun, Cote St. Paul, St. Henri and Montreal, enables Mr. Hunter to procure stable manure in abundance, as being for this farm the most suitable and

economical fertilizer for the production of the maximum of crops and for intensive mixed farming.

The result of all these ameliorating works has been : hay crops of over 400 bundles to the acre, oat crops of at least 50 to 60 bushels to the acre, green fodder crops of about 7 tons to the acre in the dried state, mangold crops of at least 40 tons to the acre, carrot crops of the large white variety of 25 to 30 tons to the acre and pastures, whose value in hay from the grass should exceed 500 bundles to the acre, in so far as we could judge, from the appearance and state of the crops at the time of our visit. Further, the improved fields were clean and in perfect condition.

In the pastures, improved drinking troughs, fed by drains or by an aqueduct, supply the stock with fresh, healthy water, while in all the fields there are clumps of trees which protect the cattle from the heat of the sun.

All the crops are exceedingly well put in. The grains are long, strong, clean and regular ; the furrows cannot be seen between the ridges, which are broad and straight. The hoed crops are the ideal of perfection. The soil is clean and deeply worked, permeable to air and water and sufficiently cool, while there is an equal distance, everywhere, between the rows and the plants and the furrows are run as if with a line.

On the 23rd July, the beets were 3 inches in diameter. Only a few of the turnips had missed.

The yards, garden, avenues, and farm roads are macadamized and bordered with a still young plantation of red maples and other deciduous forest trees separated 16 to 18 feet from each other, some of these trees being exotics. We would have preferred to have seen sugar maples and walnuts, native and more useful trees.

The fences are of iron wire trellis and bordered around the garden and the house with flowers, runner beans, tall nasturtiums, etc.

A handsome lawn of green sward, traversed by a broad avenue, ornaments the front of the property. The buildings constructed in princely style with all the luxury and richness which merchant and manufacturing princes can alone display are kept, like all the other parts of the farm, in

a state of cleanliness that would dumbfound or drive wild many farmers, who consider their stables always clean enough. Setting aside the luxury, the richness, the finish, the paint, the varnish and the iron, the space monopolized may be excessive from the economic but not from the hygienic point of view ; but we find that in the structures in question there are a great many good things which many farmers might imitate to advantage within the measure of their means, such as the dimensions of the stalls, the pavements, drains, lighting, ventilation, comfort of man and beast, and even the style of construction. The illustrations and titles, which we publish with the present report, show the chief details. We cannot, however, say that these buildings are altogether faultless, as there is nothing perfect under the sun.

The cattle are pure Ayrshire, partly imported and from good stock. They are well, perhaps too well, kept for the economical production of milk.

The farm is amply provided with tools, implements and all the necessary and improved machinery.

The garden is symmetrically divided and well cultivated to different vegetables, small fruits and flowers.

For more ample information, we give succinctly a few details furnished by Mr. Hunter, manager for Mr. Ogilvie :

FARM

Area under tillage.....	175 acres
Uncultivable pasture	75 "
Orchard	2 "
Garden.....	3 "

Crops examined by the Commission are as given and used as the basis for the apportionment of the points :

Oats.....	44.00	7.50
Mixture, oats and peas.....	12.00	2.05
Mangolds, long, red	7.00	1.20
Turnips.....	1.00	0.15

White Carrots, large, half long.....	5.00	0.85
Potatoes.....	3.00	0.50
Meadow of timothy or timothy and clover.	58.00	9.65
Pasture (apart from the uncultivable part)	28.00	4.75
Green Fodder.....	12.00	2.05
Orchard (old).....	2.00	0.25
Garden	0.75	1.00
	172.75	29.95

This is a maximum of production.

Rotation given and apparently followed :

1. Oats. 2. Roots and others hoed crops. 3. Barley or oats with fodder grains. 4. Meadow, clover and timothy, two cuttings. 5. Same, one cutting. 6 and 7. Pasture, with re-seeding, in the spring of the first year, with 2 lbs of alsike clover, $\frac{1}{2}$ lb small red clover and a little white clover.

This rotation must be excellent, judging from the abundance of the crops seen by us.

Semi-Fallow.—In order to destroy the weeds and especially the wild mustard with which this farm was infested long before the present owner took possession, Mr. Hunter, after removing the green fodder in the month of July, gives to the soil three ploughings and harrowings at different intervals. And, with the same view, making no allowance for the other advantages, the horse hoe is kept constantly stirring up the land among the hoed crops until prevented by the increased development of the plants. There is consequently never any nourishment stolen by foreign plants, while the pulverization and aeration of the soil, coupled with the retention of the moisture through the rupture of the capillary conduits, favor the nutrition and growth of the plants. The result of this enlightened practice is an abundant crop such as we had occasion to admire on all the improved parts of the farm.

Manuring.—The stable manure is applied in the spring, at the rate of 25 to 30 loads to the acre, to the roots in the open furrows and turned on in ridges on which the seed is sown, so that the roots directly draw their

nourishment from it. Mr. Hunter adds 200 lbs of salt in the furrows for beets and potatoes and this method must be good in view of the superior returns from it.

Treatment of Manures.—The manures from the stables are placed under shelter, then carted out from time to time and deposited in large quadrangular heaps of 3 to 4 feet high in the fields where they are to be used. These piles of manure are trampled down and covered with straw. The same thing is done with the manure purchased in the adjacent towns, from which a thousand double loads are drawn annually. This is a favorable circumstance which Mr. Ogilvie's manager knows how to turn to good account.

Permanent Pasture.—We had occasion to admire in the vicinity of the buildings a permanent or long term pasture, which may rightly be regarded as the beau ideal of a good pasture in every respect. It is this pasture whose yield in digestible foods we estimated as equivalent to 500 bundles of hay. It is composed of a thick sward, several inches high, abundantly made up of a mixture of fine grasses and red, white and yellow clovers. There is not an inch of the surface bare or monopolized by weeds. We happened to let a lead pencil drop and it floated on the close herbage as on the fleece of a Shropshire sheep. The cows do not stay long on this pasture as they fill themselves in a few minutes, so that they do not uselessly beat down and spoil the grass and do not lose, in running after their food, either time or that animal activity intended for the benefit of the functions of the digestive and milk-secreting organs. If it be true, according to some agricultural authorities that the digestible foods contained in a pound of normal hay and consumed in proper form by a good milch cow, produce a pound of milk, the foods contained in the equivalent of 7,500 lbs of hay furnished by Mr. Ogilvie's pasture, should produce 7,500 lbs of milk or about \$60.00. In practice, this may appear fabulous. But allowing for exaggeration and impossibility in practice to obtain such a result, we might still be content with 50 per cent less. Whatever may be the case, the fact noted justifies the principle that every farmer feeding stock on his farm, should devote attention to the cultivation of his pastures, to getting them to produce the best grass possible, to subdividing them and to not allowing them to be grazed too much at any one time in order to derive a greater revenue from them.

STOCK

Horses.—Four brood mares, six other working horses, a carriage horse, six young horses and a yearling colt. The working horses are of the Clyde breed, pure or crossed, and are of good quality. In fact, the whole of the horse stables, animals as well as harness and grooms, are of the good Scotch type.

Cattle.—On the occasion of our visit, we remarked three bulls, 1 yearling, 1 of 2 years and 1 aged; 6 bulls of the year; 25 cows, apart from 14 imported animals still in quarantine⁽¹⁾, 3 two year old heifers, 7 yearling heifers and 9 heifers of the year. All these animals, most of which have been freshly imported, are of the good Ayrshire type.

The points awarded for Mr. Ogilvie's cattle amount to 14.80. This is simply to establish the difference which we believe we noted between them and the cattle of his rival competitor, Mr. Reford, to whom we could not award more than the maximum of points, for Mr. Ogilvie's cattle deserved rather 15 points than other herds 12 points.

Mr. Ogilvie keeps no sheep. He only raises a few pigs of pretty good quality for the use of the farm.

The milk is sold in its natural condition or as cream; but some excellent butter is also made.

Poultry.—In the matter of poultry, some dozens of pure Minorca hens are kept; there is no remarkable feature to be noted in this department.

Feed of the Milch Cows.—In summer, pasture, 4 lbs of ground grain, and 4 lbs of bran per head daily. In winter, same quantity of mealy substances, hay or dried green fodder, with the addition of 1 bushel of roots to supply the want of succulence in the dry fodder. On this diet, the cows should give a great deal of milk at any season. We saw several milked, which gave over 50 lbs of milk per day even several months after calving. The market for its dairy products is therefore constant and at the door of the farm.

(1) The new importation which was in quarantine, arrived a few days after our visit.

Mr. Hunter last year purchased 15 tons of bran and 15 tons of ground grain.

This, added to the vegetables and fodder raised on the farm, indicates very plainly that the stock does not die of hunger. We even observed that the dry cows and the heifers were too highly fed and too much in flesh for milch stock. But the diet is better suited for the good big Ayrshire cows in full milk, seeing that the milk, the cream and the butter, as well as the beasts themselves, sell readily and well.

BOOK-KEEPING

As the amounts of his sale from the 26th April, 1899, to the 1st June, 1900, Mr Hunter gives the following: Butter, milk and cream, \$1450.00. Animals: horses, cattle and pigs \$1366.50 or a total of \$2816.50. Still, according to Mr. Hunter's journal of receipts and expenses, the accounts of the year ended on the 30th April, 1899, show a deficit of \$2473.04; but in the expenses are included all the sums imputable to capital, for real improvements, which are considerable every year, and for the purchase of improved stock at high prices: We should have liked to have seen a statement of the receipts and expenses of the farming property so called in order to be in a better position to judge of the value of the system followed from the financial point of view.

Remarks.—Whatever may be the financial results, which, under the circumstances, may appear to be doubtful on a farm where everything is done in princely style, as perfectly as possible and without regard to cost, they are nevertheless possible. In any case, the improvements and the treatment of the soil, the perfection of the cropping, the rotation followed and the way in which the stock is kept are so many good examples which most of our farmers and especially those who have plenty of help, would find it profitable to imitate.

Granting that the love of farming and above all of fine farming has led Mr. Ogilvie, for his great agricultural improvements, to spend large sums, the interest, upon which he may be willing to sacrifice, temporarily at least, he has none the less contributed to increase the real, productive wealth of the county and to set some good examples to his fellow citizens for which the gold medal of the 1st Laureate of this competition will not have rewarded an empty merit.

*NOTE: Mr. Ogilvie had promised to send us in proper time the plan of his farm, which we would have liked to publish here, but he was unable to do so before the appearance of this report.



Fig. 1. Ogilvie farm. Farm buildings, view of the East side.



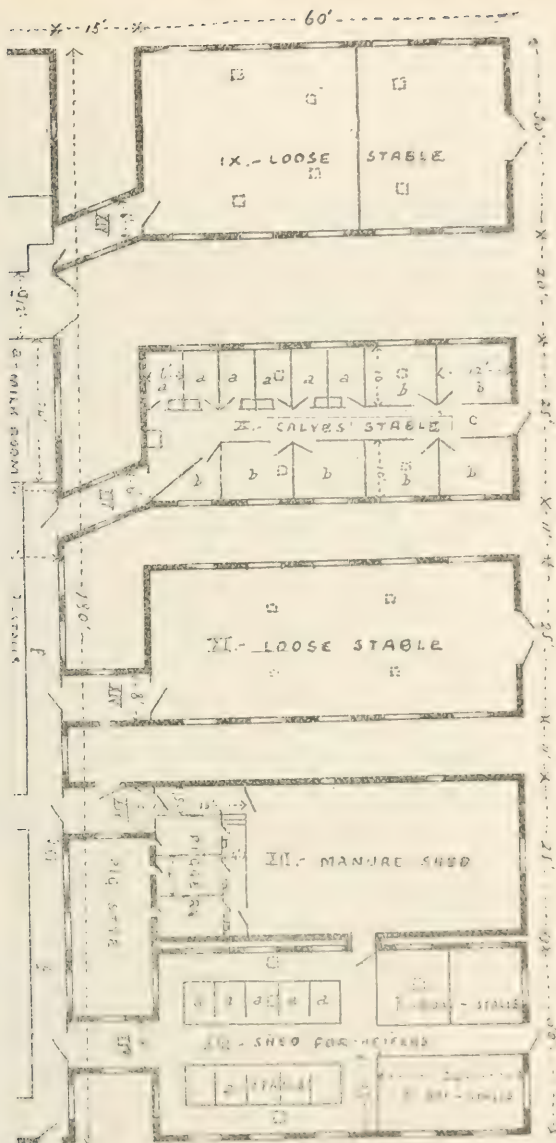
Fig. 2. Ogilvie farm. View of the South side.



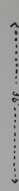
Fig. 3. Ogilvie farm. View from the West



Fig. 4. Ogilvie farm. View from the North-West



11. 11. 11.



ILLUSTRATIONS RELATIVE TO THE OGILVIE FARM

FIG. 1. Plate 1

Farm Buildings.—Front view, showing the avenue, bordered with trees and leading from the public road to the barns and stables.

FIG. 2. Plate 1

View of the same buildings taken from the south in the adjacent field.

FIG. 3. Plate 2

View of the same taken from the west in the pasture. To the right, will be observed the garden house, containing an ice-house and a tool house; also three handsome Ayrshire cows browsing the thick and succulent grass under the pleasant shade of a fine large tree.

FIG. 4 Plate 2

Rear view of the same, taken from the North West, showing the five annexes, the object of which is indicated in figure 5 and its accompanying inscriptions, the shed used as shelter for the stock and supplied with mangers and, to the right, in the distance, Mr. Ogilvie's country house and the dwelling of the farm manager.

FIG. 5. Plate 3

Horizontal plan of the above buildings.

I. Lodging over the coachmen's stable for the use of servants, grooms, &c.

II. Coachmen's stable;—Coach house;—*b b* Stalls;—*c* Box Stall;—*d* Door and fodder trap with stairway or fixed ladder;—*e* Oat box and cupboard;—*f* Stairway leading to the lodging above;—*g* Tool room.

III. Waggon and Implement Shed.—*a* Elevator used to lift vehicles, machines, implements, &c, to the upper floor;—*b* Stairway leading to said floor or lift.

IV. *a, b, c.* vegetable rooms or cellars ;—*d* Double waggon entrance ;—*e* Passage from the barn floor to the said cellars ;—*f* Box $2 \times 2\frac{1}{2}$ divided into seven compartments for grain, bran, &c.

V. Barn-floor used to house the fodder by means of a mechanical fork over the vegetable rooms and stables.

VI. Cow stables, milk chamber and poultry house.—*a.* Milk chamber, paved in colored tiles, with a slope towards a drain in the centre, equipped with the utensils required for the milking of the cows and the immediate care to be given to the milk ; well ventilated and cleanly kept.—*b.* Poultry house, in two separate compartments and surrounded by an iron wire trellis, with outer yards separated and surrounded by a similar trellis, well lighted by two large windows of $6' \times 4'$.—*cc.* Box stalls for loose beasts, $14' \times 9' \frac{1}{2}$.—*dd.* Stalls for two cows, $7'-3'' \times 7'-6''$ clear, including the manger.—*e.* Passage at the animal's heads, $7'-2'' \frac{1}{2}$.—*ff.* Passages in rear of the animals, $4'-9''$; transverse passages, $6' \times 6'$.—*gg.* Taps supplying the water to water the stock and for washing out.—*h.* Fodder trap $3' \times 5'$ in the ceiling.—*i.* Vertical spout conveying the ground grain from the loft above.—*jj.* Ventilators, $8'' \times 8''$, to the number of 14, openings above horizontal spouts with sloping bottoms, open at the bottom and $4'$ to $5'$ long, discharging into the drain the drops of water formed by the condensation of the vapors and diminishing the intensity of the current of air by breaking its direction, an arrangement which helps to render the stable healthier and to prevent currents of air from striking the bodies of the animals too directly.

VII. Horse Stables—*a* Harness room 12×18 , paved with concrete or cement, brick walls $15''$ thick, supplied with hooks and covers for the harness. A Daisy furnace (1) with heating apparatus ; a farm boiler (2) and a chimney (3). The metal boiler is provided above the back of the wooden cover with a pipe which conveys the steam into the smoke pipe which in turn is connected with that of the furnace ; overhead is the water reservoir fed by a pump worked by a wind-mill, which can be seen above the roof of the building : Figs 1 and 2—*bb* Box stalls—2 of $14' \times 16'$, 1 of $12' \times 9'$ for young horses, stallions and brood mares :—*cc* Stalls for working horses $6' \times 9'$ *d* Sink and water tap. *e* Utensil cupboards.



Fig. 6. Ogilvie farm. Interior of the Stable. Centre passage.

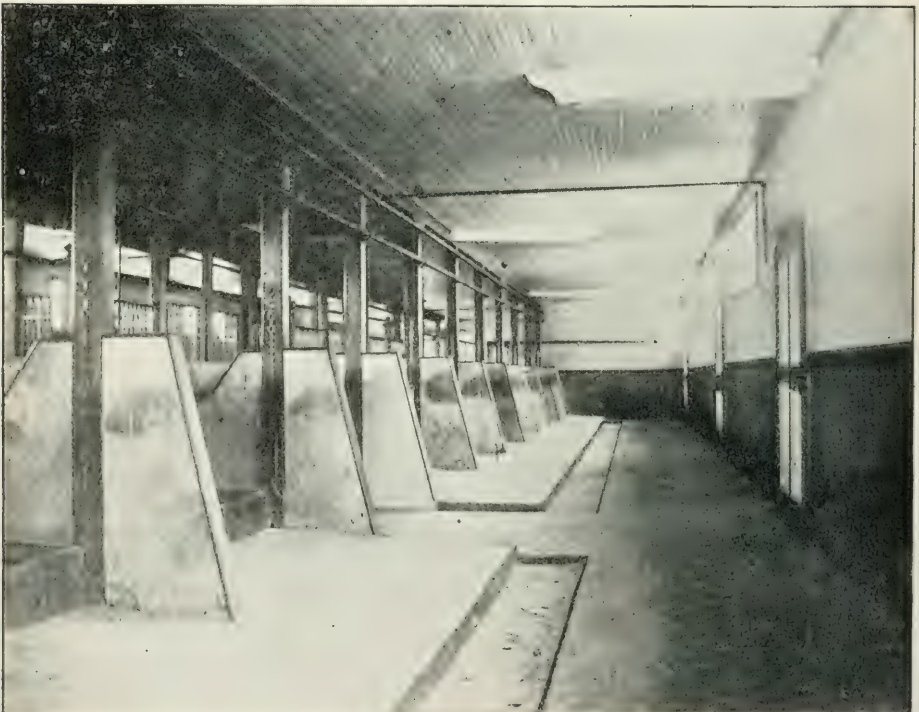


Fig. 7. Ogilvie farm. Interior of the Stable Stalls.

f Fodder trap 5' x 5'—*gg* Ventilators on the same plan as in the cow stable.

VIII. Barn, paved in wood, whence the loft above the horse stables is filled and where the litter for the horses is prepared.

IX. Wing 30' x 60'—Stable for loose animals in exercise, divided into two compartments, supplied with high racks, metal boxes for rations, ventilators and windows.

X. Calves' Stable.—*aa*. Pens 6' x 10'.—*bb*. Boxes 10' x 12' and one of triangular shape.—*c*. Alley 4'.—Door on the N. W. 4'.—doors of the pens 3'; those of the boxes 4'.—In the pens, alongside the doors, a wooden manger of 14" x 10" at the bottom and 24" at the top by 18" deep, with a metal box on one side of 11" x 18".—The boxes are also provided with mangers.

XI. Stable for loose animals.—25' x 60' also used for serving the cows and exercising them in winter, ventilated and thoroughly lighted.

XII. Piggery and manure shed.—*a*. Piggery 15' x 25', three compartments of 7' x 11' passage 4'.—*b*. Outside yard for the pigs. The compartments open into this yard. The troughs in the piggery are sheathed with galvanized iron, as are also the feeding wickets, which are 6" x 20".

XIII. Heifer Stable 30' x 60', paved in concrete or cement—*aa* Double stalls 6' x 5' manger included :—*bb* Compartments for loose beasts, supplied with racks, etc.

XIV. Passage leading from the barn to the cow stable in the wings.

FIG. 6. Plate 4

View of the interior of the cow stable.—VI. Centre passage, showing the divisions of the stalls, the front of the mangers and the trough, which are hidden by the outer woodwork provided with shutters opening downwards through which the fodder is passed underneath the trough and closing with two brass buttons, a tap over a bucket, the fodder trap in the ceiling, the 4 feet door at the end leading to the barn floor, the box stalls to the left, with the upper part in iron dividing bars.

FIG. 7. Plate 4

View of the interior of the cow stable —VI. Rear passage, north side,

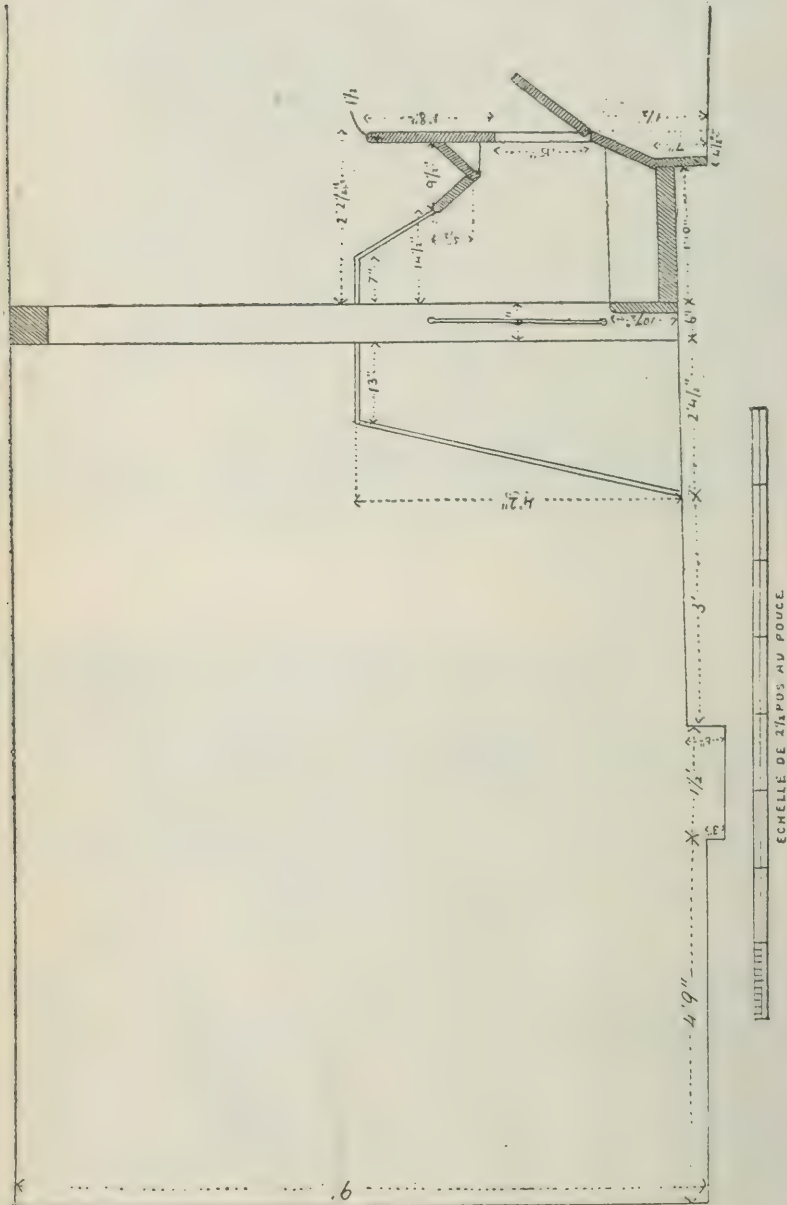


Fig. 8.—Ogilvie Farm.—Vertical cut of a row of cow stalls

showing the stalls, divisions, gutter, doors opening into the passages of the wings, the ventilating shafts in the ceiling.

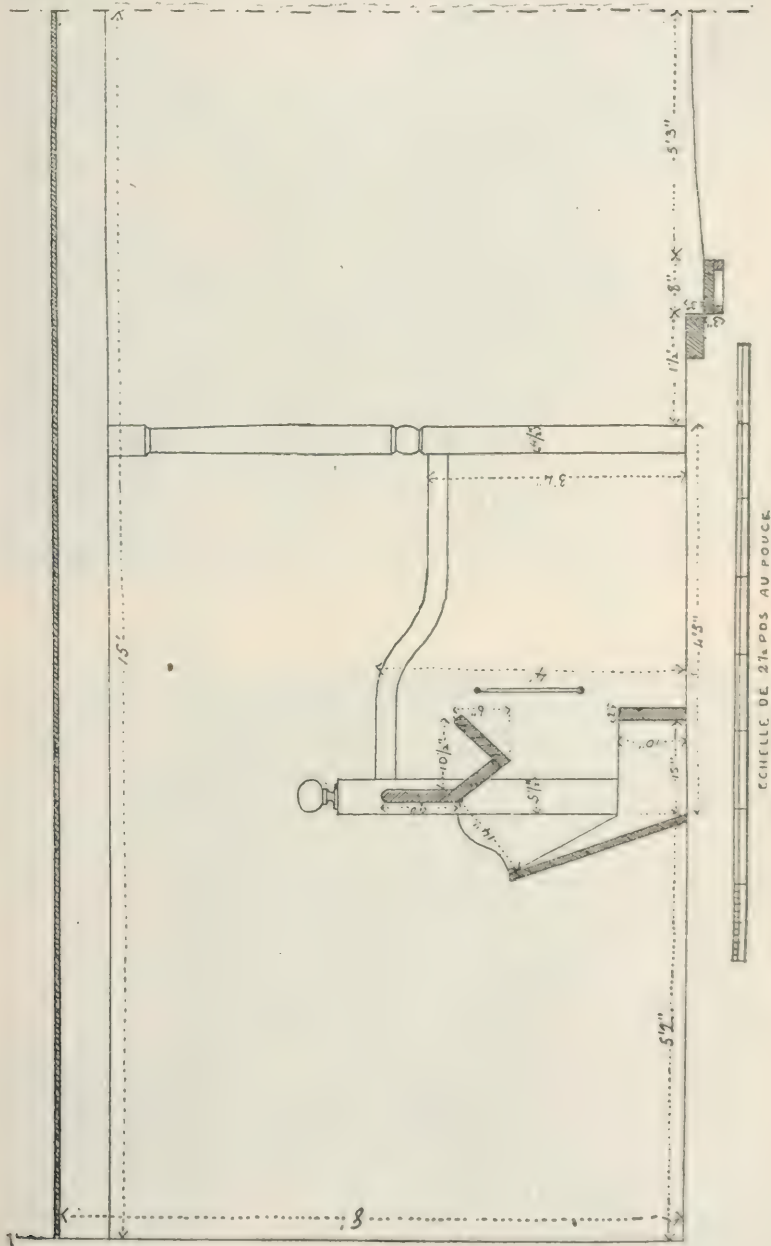


Fig. 10.—Ogilvie Farm.—Vertical cut of a stall of the heifers' stable.

Vertical cut of a row of stalls, half-width of the stable, with the dimensions indicated.

FIG. 9. Plate 5

Interior view of a row of stalls in the heifer stable—XIII—left side taken from the middle, from east to west, showing the upper part of the division of the boxes at the end in iron bars and the door opening into the manure shed.

Vertical cut of a stall in the heifer stable—XIII—half the width of the building. The gutter is bordered on the side of the stalls with a plank 3" x 7" embedded in the cement and covered by another loose plank pierced with holes.

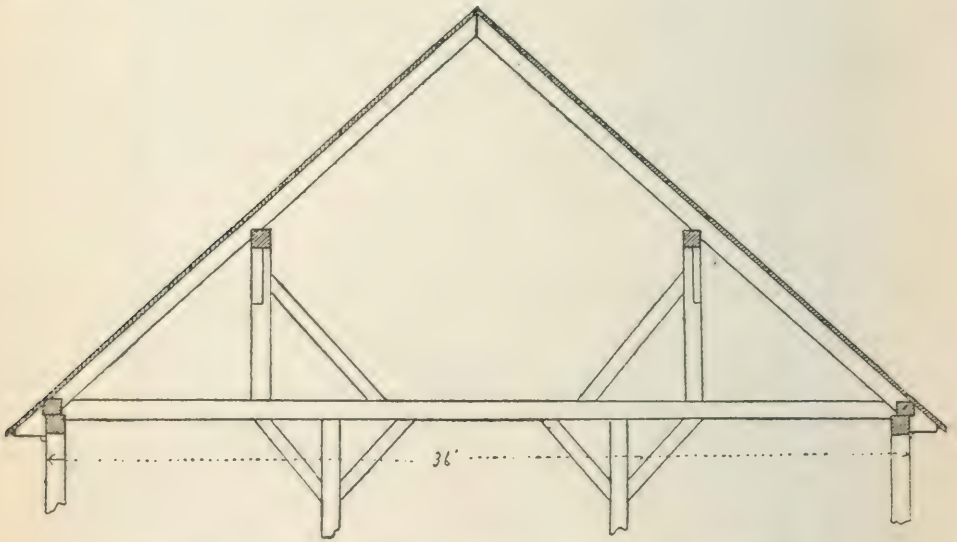


Fig. 11.—Ogilvie Farm.—Framework of the roof of the barn.

Framework of the roof of the barn covered with slate.

N. B.—The walls of the cow and horse stables are constructed as follows: A double thickness of grooved and tongued boards upright, whitewashed, battened and painted outside, paper, a double thickness of rough boards, an air space of 5" and the framework; a double thickness of grooved and tongued boards upright and painted inside.



Fig. 9. Ogilvie farm, Heifer stalls.



Fig. 12. Ogilvie farm Gate and mode of closing



Fig. 13. Ogilvie farm. Group of Ayrshire cows



Fig. 14. Ogilvie farm. Ayrshire cow May Flower



Fig. 15. Ogilvie farm. Ayrshire bull Douglassdale.



Fig. 16. Ogilvie farm. Collecting drain in stone.

FIG. 12. Plate 5

Showing a gate and its mode of closing, bar, staple and hook and moveable staple holding in place above the two uprights of the middle of the gate closed and also showing the south gable of the western wing of the farm buildings.

FIG. 13. Plate 6

Group of Ayrshire cows in the pasture, in the eastern part of the farm.

FIG. 14. Plate 6

View of the Ayrshire cow "May Flower" No. 9175, Can. Reg., which yielded 29 lbs of milk at the evening milking on the day of the judges' visit.

FIG. 15. Plate 7

View of the Ayrshire bull "Douglassdale" No. 3954, Scotch Reg.

N. B. The spots on the hip and thigh are due to an accident in developing the photograph.

FIG. 16. Plate 7

Showing a collecting drain of stone in course of construction, about 4 feet deep x 4'-6" wide, with large stones at the bottom so placed in position as to leave a covered channel of 12" to 15" in diameter. The spaces between the large stones and the upper part of the drain are filled with smaller stones. This drain has a sufficient slope and is located in a bottom of excellent mixed black mould. The stone used for this is taken from the ground itself on each side of the drain, which serves to draw off the humidity, to clean the soil and to bring into abundant productiveness a piece of land that was virtually barren.

ROBERT REFORD, ESQR.

On the 27th and 28th July, we visited Mr. Robert Reford's farm, at Ste. Anne de Bellevue, which is traversed by two great railway lines, the C. P. R. and G. T. R. The Grand Trunk Railway's station is immediately opposite the house and farm building, which are erected on a light eminence overlooking the entire property to the North and South.

Mr. James Boden, a skillful Scotch agriculturist and stock breeder, is the manager of this farm. Like his fellow countryman and relative, Mr. Hunter, he has only been in this country a few years and is thoroughly versed in the improved farming and stock raising of Scotland. Coming as he does from Ayrshire, it is needless to ask whether he loves the Ayrshire cattle and knows them!

Mr. Reford's farm, as regards the composition and natural condition of the soil, the general conformation of the ground, the buildings, improvement and embellishments, the stock and the general system of working, presents much analogy to that of Mr. Ogilvie in the lower part of Lachine. Mr. Reford seems desirous to imitate and even to surpass his high-toned rival in agriculture, Mr. Ogilvie. The competitors' table shows that he has succeeded in doing so on several points.

Generally speaking, the soil of the middle and lower parts of the farm lacks depth.

The limestone rock outcrops in several places in the higher parts, where the grasses succeed better than deep cropping. Considerable sums have been laid out in levelling and draining works, tree-planting, road-making, field divisions, fencing, and the construction of a splendid dwelling house and buildings richly and comfortably furnished.

The part of the farm that appeared to us to be the best is the upper one, which is nevertheless lower than the middle, being a kind of level valley of excellent sandy-clay soil, probably rather calcareous, but suffering from humidity owing to being insufficiently drained. Drainage would render this soil eminently productive, but as an underground discharge pipe for the waters would have to traverse the neighboring lands for a pretty long distance and its laying would necessitate rock-blasting at several places, this improvement would cost a considerable sum. Still we think that it would be more remunerative than many others which the very wealthy proprietor of this farm has not hesitated to carry out.

The illustrations appended sufficiently show the farm in all its details and we, therefore, dispense with a pen and ink description of it, which, moreover, would only needlessly burthen this report.

FARM.

Total area	300 acres
Cultivable area.....	260 "
Area in bush.....	40 "
Area in orchard	2 "
Area in garden.....	0.25 "

STOCK.

Horses.—15 good ones, of the Clyde breed.

Cattle.—Bulls, aged.....	3
" yearling	3
Bull calves.....	7
Milch cows.....	29
Two years old heifers	6
Yearling heifers	23
Heifers of the year..	13
	—
	84 head

All pure Ayrshires. This number is subject to fluctuation, because Mr. Reford frequently imports and sells at prices well calculated to put meagre purses to rout. We met there a number of buyers, some of whom had done business as satisfactory to themselves as to the seller. It may be said without favoritism that Mr. Reford's herd, considered as a whole, is of superior quality. It is as well kept both in respect of hygiene and of its feeding and the animals are consequently vigorous, active and full of health. We weighed the milking of several cows, which give over 50 lbs. of milk per day.

Sheep.—21 of the Shropshire breed, very good. The ewes are remarkably prolific. Five ewes gave together 16 lambs, four of them 3 each, and one 4; but only 9 of the young survived.

Pigs.—27 Yorkshires and Berkshires, good.

Poultry.—Plymouth Rocks in good number.

Farm Machinery and Implements.—Complete and improved.

CROPS OF 1900.

Barley 6 acres 0. 75 pts.

Oats 65 acres 9. 00 “

Mangolds: yellow Globes and long

red, very fine 8 acres 1. 20 “

Turnips 7 acres 0. 75 “

Potatoes: Magnum Bonum and

Setton Main crop, very fine.. 3 acres 0. 50 “

A crop of the last mentioned variety was sold in Scotland for £42 per acre. Seven pounds of this variety imported and planted in 1897, yielded enough to supply the wants this year of the farm staff and Mr. Reford's private house, besides 20 bags sold and an acre still remained to be gathered. It is a half-early variety.

Indian corn for ensilage 16 acres 2. 65 pts.

Sown on the 28th May, in meadow treated with liquid manure last year after the cutting off of the hay and ploughed last fall, without other manure. At the end of July, this Indian corn measured 9 feet high. Rows 3 feet apart, clean, regular stacks, strong, well fed, none missing. The yield of this field is over 30 tons to the acre. (1)

Hay 21 acres 3.45 pts.

Pasture 50 “ 8.00 “

(1) NOTE.—Since then, Mr. Boden has supplied, with regard to the root crops, the following statement of yields: Mangolds, 35 tons to the acre; Swedish turnips, 37½ tons to the acre.

Grass abundant and rich in the improved fields. A six years' old pasture was noticed approaching the quality and richness of the one noted at the Ogilvie farm. It was formed nearly in the same manner by sowing a mixture of 18 lbs of red alsike and white clovers, ray-grass, meadow fox-tail and Italian eye-grass. We would note here a peculiarity of culture which deserves the attention of farmers. Mr. Boden forms a couple of annual pastures on ploughed and well cultivated fields. He sows early in the spring as soon as the soil is well prepared, 3 bushels of oats to the acre and at least 5 lbs of a mixture of medium red alsike and crimson clover and, as soon as the oats begin to grow strong, he turns the cattle into the field a few hours a day only, so that the pasture may not be grazed too close at once. The cows thus harvest the green fodder. This pasture is ploughed early in the autumn and contributes materially to the physical improvement of the soil and to the maintenance of its richness in nitrogen, without taking into account that it provides the cattle, sheep, pigs, etc., with food in abundance and of good quality. The value of the yield in succulent food may be estimated at nearly 300 bundles of hay per acre. This practice might be emulated to advantage, we think, by a great many farmers, who lack pastures already in grass (fallows). It seems to us to be a good way to increase the revenue of the milk per cow and per acre of land and also to raise pork cheaply. We should add that Mr. Boden sows clover among all his cereals. The advantage of this practice is to enrich the soil in humus and nitrogen and to prevent the escape of the nitrates after the ripening of the grain. It is therefore an economical process to keep up the fertility of the soil and to supply, partially at least, the want of the manures, which Mr. Boden cannot procure as easily as his fellow countryman, Mr. Hunter, of the Ogilvie farm.

Further, the increased quantity of food maintains the flow of milk and the production of good butter through the autumn. It is also an excellent practice, which may be recommended to all our farmers similarly situated.

Green Fodder.—Mixture of oats, lentils and peas...5 acres...0.75 pts.

Sown at 3 different intervals.

Most of our ordinary farmers do not engage sufficiently in this productive culture of milk.

Orchard—2 acres, still young and of good appearance, contains several varieties of apples..... 0.35 pts

The proximity of the bed-rock may perhaps hurt the longevity of the trees.

Garden— $\frac{1}{4}$ acre, is divided and kept with art and pretty well resembles the one on the Ogilvie farm. 1. 00 pt

The total points awarded for the state of the crops was.... 28. 40

The insufficiency or the imperfect working of the drainage, in certain places, has helped to diminish the yields ; at least such were the appearances on the day of the inspection, for, in view of the heavy production of certain well drained fields, it is difficult to attribute the difference in the crops to other causes where the soil is apparently of the same composition.

Protection, Care and Use of the Manures.—The cow and horse stables being paved with cement and provided with an excellent system of drainage through earthenware pipes, carrying off the urine and the waste water into the liquid manure pit, a vast reservoir beneath the manure shed surmounted by a pump, and the stable of the fattening animals being always covered with a heavy litter of straw or other absorbents, which are only taken away after the animals are removed for slaughter, indicates that no fertilizing material is lost on the farm and that as much of it as possible is made. All the manure is kept under cover during the winter in the building aforesaid, where it is wetted with the liquid manure pumped from the pit, then carried out and deposited in large heaps on the field for which it is intended.

The manures are applied to the roots in the ridges or in the furrows, as on the Ogilvie farm. In the garden, they are applied as a dressing. Sprinkling with the liquid manure is also done. We have already stated that the piece of meadow intended to bear a crop of fodder corn was watered with liquid manure before being turned in.

Food of the Stock.—Pigs.—In winter, grains raised on the farm and cooked roots given warm ; in summer, ground or crushed grains and grass.

Milch Cows.—In winter: roots, ensilage, hay and grain. ensilage, ground grain and bran in equal parts, morning and evening; mangolds and carrots at noon;—in summer, pasture and 4 lbs of ground grain and bran per head a day. Oil cake is used for the young animals.

Sheep.—Winter: hay and turnips; at lambing time. ground grain and bran are added.

ORDINARY ROTATION

1. Roots and potatoes, manured in the ridge and furrow in the spring at the rate of 15 to 20 tons to the acre, with well rotted manure from the previous year, to prevent the multiplication of weeds. Only for this season, Mr. Boden would prefer green manure, as having lost less of its fertilizing properties.

2. Barley or oats or both mixed together, with fodder seeds—say, 5 lbs of a mixture of red clover and alsike, and 7 lbs of timothy or 12 lbs in all to the acre. The same quantity is sown among all the grains as aforesaid.

3. Meadow; 4 do, partially pastured by the young stock in the autumn; 5 and 6, pastures. The meadows are rolled early in the spring to compact the raised soil and to replace the roots in contact with the earth; then late in the fall, before the frosts, to lay down the grass that is not cut off, to hasten its prompt decomposition and to prevent it from impeding the mower.

7. Oats or fodder Indian corn on certain plots. In this case, the animals are removed early from the pasture; liquid manure is spread over the soil in the month of August and then the grass is allowed to grow again, when it is turned under with the plough in the autumn. According to our statement as above, there seems to be contradiction in the information supplied to us in this subject. Mr. Boden, in his system of cropping, has assimilated the pasture to the meadow or he grows his Indian corn on the one or the other under circumstances which he forget to tell us. Moreover, this difference would take nothing from the quality of his method. In its application, Mr. Reford gives a system of 5 years, while the one above reported is one of 6 years, but this is not a contradiction since practically

no rotation can always be rigorous. The duration of the meadow or of the pasture may, under certain circumstances, be advantageously reduced or increased by one year especially on a farm to which new and improved plots are added from time to time.

The ploughing is done deeply to 9 inches at Mr. Reford's. Good Scotch farmers know the virtues and the value of deep ploughing.

The drainage is effected through earthenware pipes, but does not appear to work perfectly all over, as already mentioned.

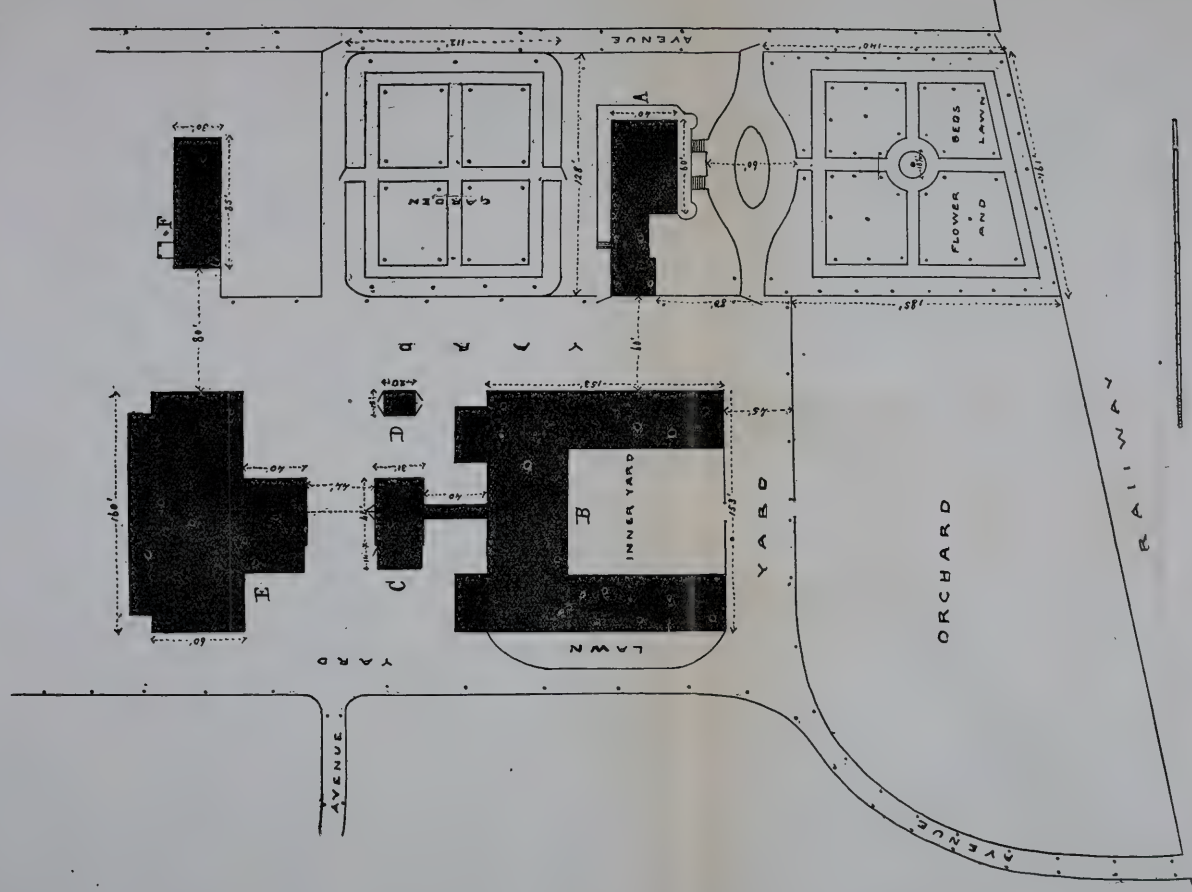
Draining is an art which can only be carried out advantageously by skilled workmen who know its laws, without running the risk of disappointment and useless expenditure.

The selection and preparation of the seed grains are not neglected by Mr. Boden.

Book-keeping.—3 points.—Mr. Boden follows a good system of book-keeping, including a book of works, a journal of expenses and receipts, a labor account, a ledger to which an abstract of the journal is transferred monthly and several other registers relating to the cattle. He makes a yearly inventory of the stock, plant, etc., in the autumn.

According to the account of the gross expenses and receipts of 1899, there appears a profit of \$2,859.96. In this account the expenses for real improvements, etc., are not included. Is this surplus of receipts a sufficient or a real interest on the capital invested in the working of this farm? We did not seek to ascertain, but we have no hesitation in believing that the tillage proper is capable of yielding profits, deducting all the unproductive expenses occasioned by the richness of the buildings, the ornamental plantations, flower beds, lawns, the stoning of the roads and the cost of keeping up all these embellishments, which are all outlay that may be regarded as superfluous on a farm cultivated with a view to a sure profit intended to support its proprietor.

The above figures show at all events that the practice followed is good and that it may serve as an example to others.



Mr. Reford sold in 1899 \$3,780 worth of cattle. He makes frequent importations of Ayrshires sprung from the best milking strains in Scotland. Under this head, there seemed to us to exist between Mr. Ogilvie and Mr. Reford a happy rivalry, which contributed not a little to render our mission as inspecting judges delicate, difficult and embarrassing in that we were obliged, at the period of our visits, to recognize a slight difference between the superior qualities of the herds of these two great breeders and importers of milch cattle.

Illustrations relating to Mr. Reford's farm.

FIG 17 (p 180)

General plan of the farm;—*a* Farm building;—*b* Well;—*c* Ponds;—*dd* Shade trees for cattle;—*ee* Wooded parts;—*ff* Private avenues;—*gg* Public roads;—*h* Railway;—*ii* Drains.

FIG. 18 (Plate 8)

Showing the position of the farm building and house, yards, garden, lawn, orchard, avenues, &c.

A. Farm house embracing the dwelling of the proprietor and that of the farmer or manager.

B. Barn, cow stable, horse stable, &c.

C. Engine-house and wood shed.

D. Weighing house.

F. Stable for loose animals fattening and for pigs and agricultural implement shed.

E. Projected creamery and ice-house.

The dots along the avenues, in the yards, pasture and garden indicate the ornamental and fruit trees (in the garden) planes, maples, horse chesnuts, apple-trees, &c. The walks in the garden and lawn, the avenues and the yards, as at Mr. Ogilvies, are macadamised. An elliptic mound bordered with grass and enamelled with flowers decorates the front of the house, which is surrounded by green sward strewn with clumps of flowers and ornamental shrubs.

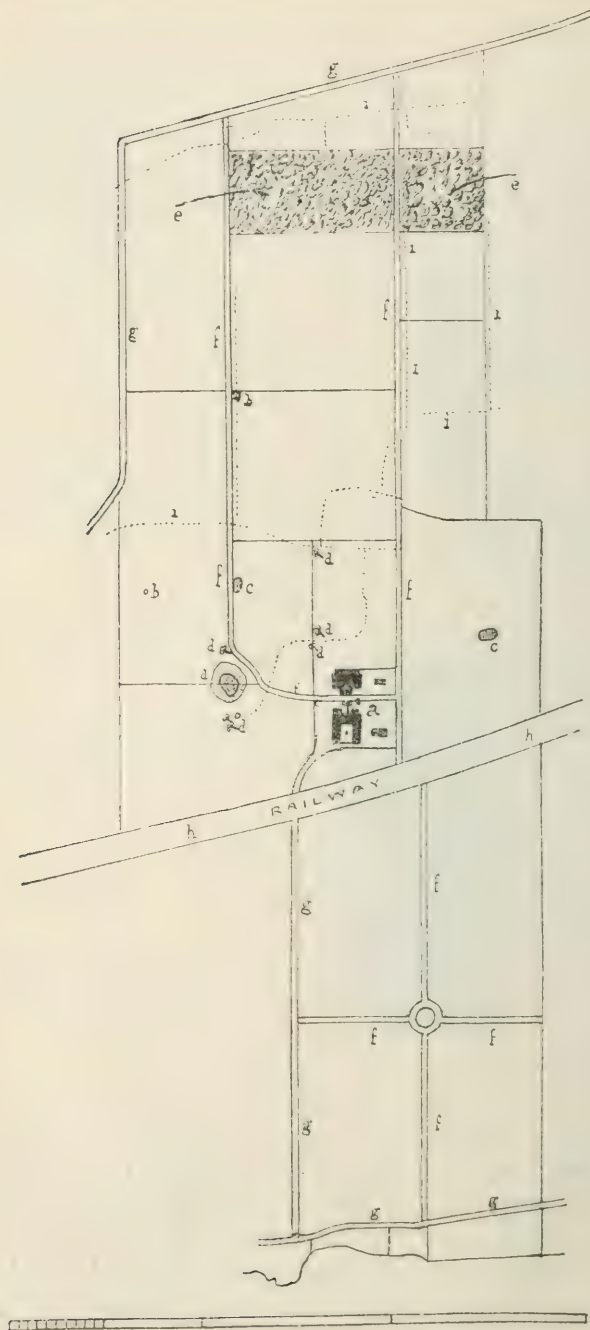


Fig 17.—Reford farm.—General plan of the farm.



Fig. 19. Reford farm. View of the parterre and avenue.



Fig. 20. Reford farm. View of the parterre, taken from the house



Fig. 21. Reford farm. Farm house and dairy.



Fig. 22. Reford farm. Front of the farm buildings.



Fig. 23. Reford farm. Main block of farm buildings.



Fig. 27. Reford farm. Interior of the horse stable.

The farmer, who cannot afford to undertake any unproductive work on his farm, may still combine the useful with the agreeable by letting the grass grow strewn with clovers of different colors, which will yield him a tender hay and, in the place of flowers, shrubs and forest trees, he may raise vegetables, kitchen garden plants, small fruits and fruit trees. Useful and remunerative agriculture does not exclude art and the attractive laying out of profitable crops, which beget love for the farm and attach families to the soil and the home.

FIG. 19. Plate 9.

View of the lawn, of the avenue, of the house and farm buildings, taken from the top of the water tank near the G. T. R. Station.

FIG. 2. Plate 9.

View of the lawn, the avenue, the water tank, the lower part of the farm, the public road and the Ottawa river towards the south east, taken from the top of the farm house.

FIG. 21. Plate 10.

View of the farm house and dairy, the garden and a corner of the cow stable, taken from the creamery, to the north.

FIG. 22. Plate 10.

Front view of the main block of the farm buildings, taken from the orchard to the south.

FIG. 23. Plate 11.

View of the main block of the farm buildings, taken from the west, showing the avenues, the western entrance of the barn, the sloping embankment leading thereto, the wood shed to the north, the engine house and wood shed alongside and the covered passage leading to the barn and containing the shaft (a sort of viaduct.)

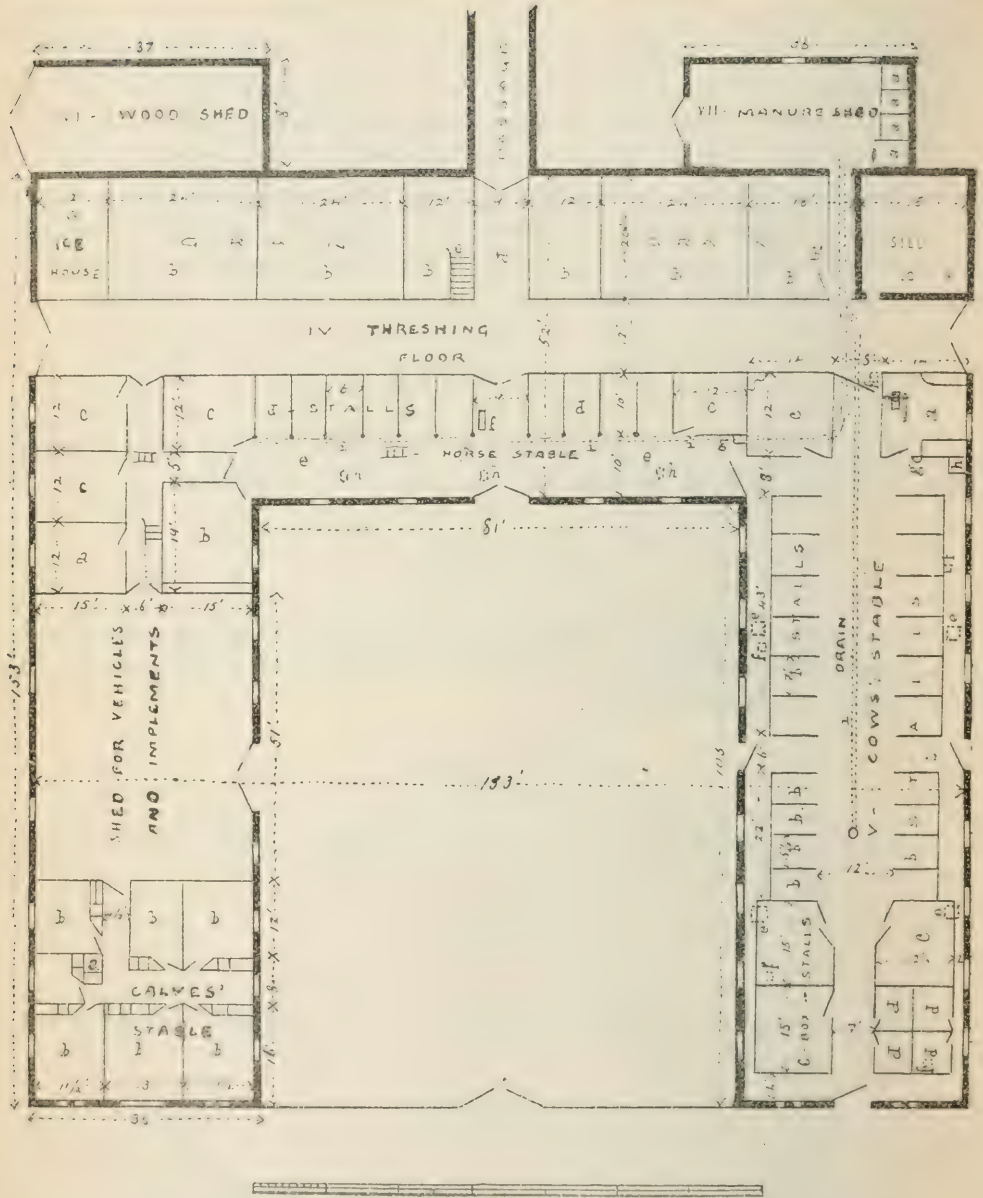


FIG. 24

Horizontal plan of the main block of the farm buildings: cow stables, horse stables, barn and wings.

I. Calves' Stable,—*a*. Bin for ground grain ; *bb*, pens or compartments provided below with wooden cribs and iron racks above. A fodder loft occupies the upper part of this section.

II. Waggon and implement room, closed ; above is a loft.

III. Horse stables, in the body of the barn.

a.—Tool room ; *b*. Harness room ; *cc*. Box-stalls ; *dd*. Stalls of 6 x 10 ; *e*. Passage of 10' behind the horses, in cement on a stoned bottom with a slope of 3" toward the drain.—*f*. Deep trough of 3' x 4' in size, with tap above, to water the horses. *g*. Sink where the employees wash their hands before leaving the stable to take their meals ;—*hh*. Ventilators.—*i*. Underground tube drain to collect the urine and convey it to the liquid manure pit.

The horses are fed from the threshing floor, of the barn through openings on a level with the mangers, the shutters of which open downwards and hook above. This arrangement seems to be particularly useful in summer, on account of the airing the openings give to the horse stable, which is thus kept cool and healthy. The openings are shown in figure 28. The upper part above the horse stable is used for storing the grain and fodders.

The stairs between the tool room and the harness room and leading to the loft over the waggon and implement room and the cow stable, can be raised and hooked to the ceiling, thus leaving the passage free.

IV. Longitudinal threshing floor and barn—*a*. Ice house ;—*bb*. Grain and straw compartments :—*b* Small loft for grain and ground feed under the fodders—*c* Silo=18' x 28' x 32' high ; *d*. Passage leading to the engine-house.—*e*. Stairway leading to the cellar under the barn.

V. Cow stable.—*a*. Milk room, paved in cement, ventilated, containing a slate-topped table, an " Alpha of Laval " hand creamer ; necessary utensils, pictures of famous animals &c.—*bb*. Cow-stalls, double ; the larger ones=7' wide and the smaller=5' 6"—*c* Box stalls for bulls—*dd*. Calf pens, with moveable partitions, which can be removed so as to form two

compartments or one as desired—provided with mangers; *ee*—Fodder traps in the ceiling—*ff*. Ventilators—*q*—Sink and tap—*h*.—Utensil cupboard—Underground drain in tile pipes of 9" conveying the urine and the washings of the stable to the liquid manure pit.

VI. Shed for firewood.

VII. Manure shed.—Liquid manure pit and spout to wet the manure.
—Privies for the use of the employees.

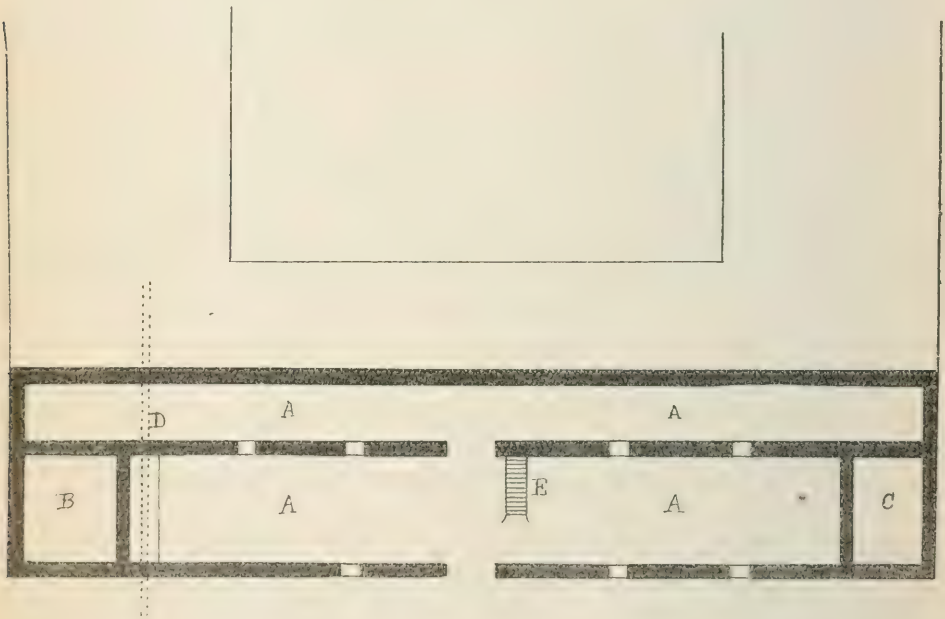
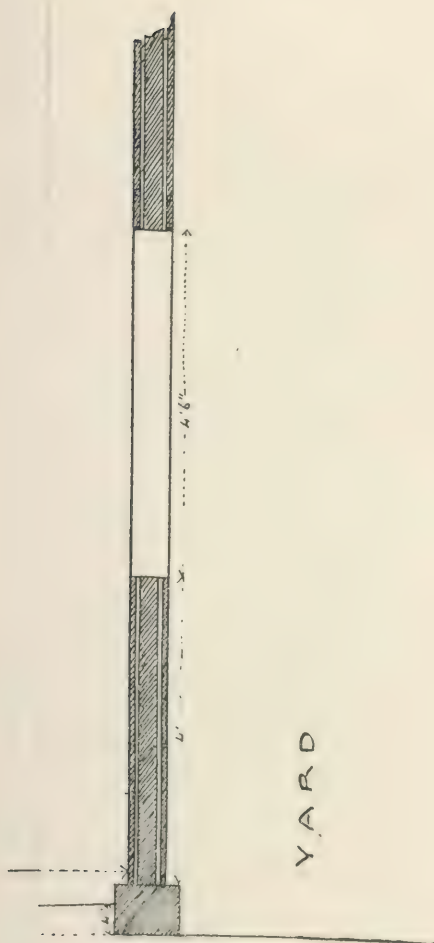


FIG. 25

Cellars under the barn.—*aa* Potato and root cellars &c., through which passes the shaft from the engine house to work the root cutter.—*b* Bottom of the silo;—*c* Bottom of the ice-house;—*d* Drain pipe from the cow and horse stables running to the liquid manure pit;—*e* Stairway leading up into the barn.

PLATE 12



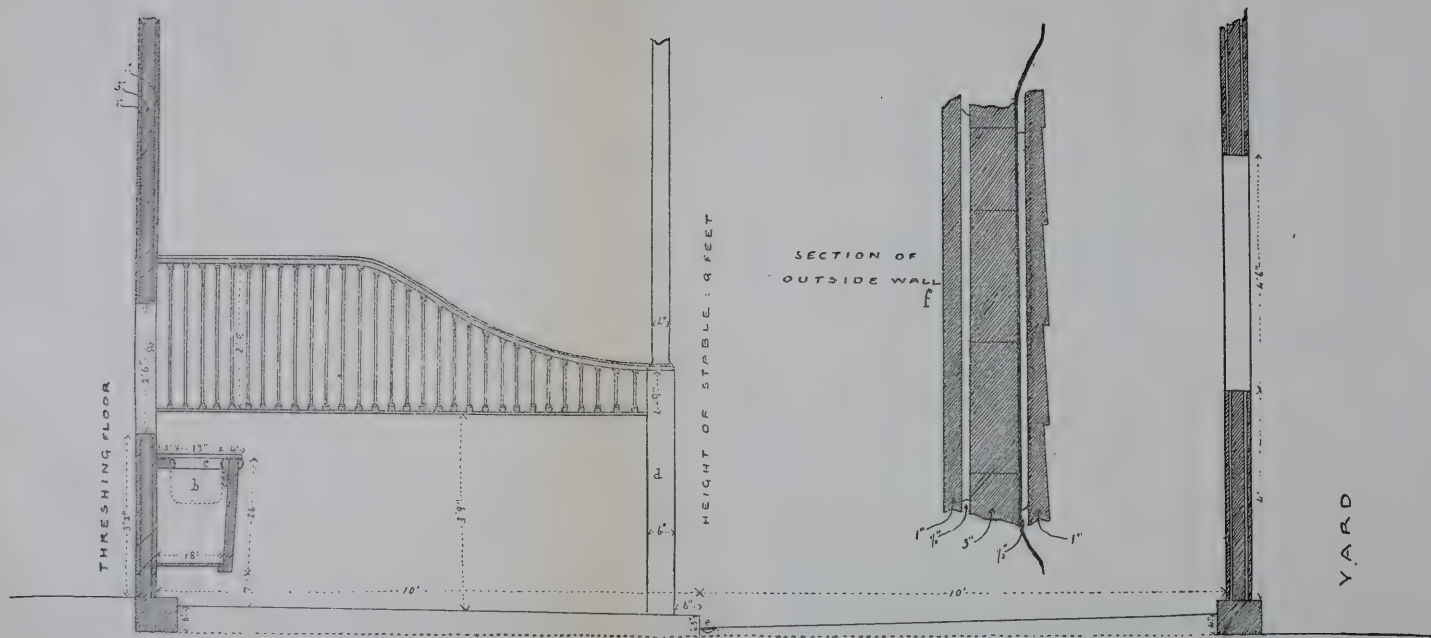


Fig. 28.—Reford Farm,—Cross-section of horse-stable.

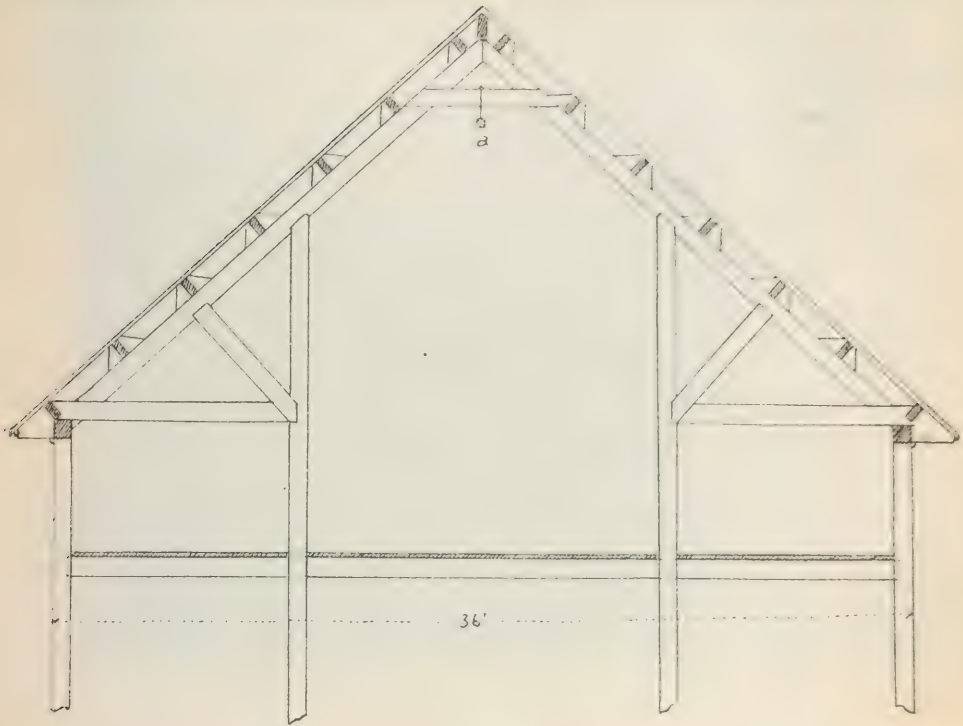


FIG. 26

Framework of the roof of the barn, which is shingled.—Principals at every 12 feet ;—*a* Cross timber intended to bear the carriage of the mechanical fork.

FIG. 27. Plate 11

View of the interior of the horse stable taken from the door of the cow stable.

FIG. 28. Plate 12

Cross section of the horse-stable ;—*a* Door of 2½' high x 2' 3" wide, opening upon the barn floor for the distribution of the fodders ;—*b* Wooden manger, with metal bottom, and metal oat box ;— Upper part of the partition separating the stalls in iron bars of ¾" fixed in two metal mouldings ;—*d* Metal pillar of 6" below and 4" above. The rear part of the divisions is sheathed with a plate of sheet iron to protect the partition against the kicking of the powerful Clyde horses. The angles of the front posts are also protected with sheet iron of one line in thickness ;—*c* Cement gutter with a moveable perforated metal cover, in lengths of a

few feet. This gutter carries the urine into the drain leading to the liquid manure pit;—*f* Outer wall: overlapping transverse clapboarding outside, an air space of $1\frac{1}{2}$ inch, papers, a transverse double of 3" deals, grooved, and tongued with V joints and painted. This wall is perfect for a warm and healthy building, but it seems expensive.

FIG. 29. Plate 13.

View of the harness room; glass cupboards, hooks, harness &c. Richly finished.

FIG. 30. Plate 13.

View of the interior of the barn, taken from the eastern end, showing to the left the door of the passage to the manure shed, that of the grain compartment; on the right the door of the passage of the cow stable and the feed openings of the horse stable; at the end, the large entrance in the western gable. Although with difficulty, there can be seen also some members of a numerous family of cats, whose presence explains the absence of rats and mice.

FIG. 31. Plate 14.

View of the interior of the cow stable.—(See fig. 24), taken from its northern end. Among other details will be noticed the moveable lantern suspended from an iron wire below the ceiling and running the whole length of the building, the small boards fixed above and on each side of the stall posts bearing the name and number of each beast in the *Herd Book*, the horizontal shafts of the ventilators in the ceiling, the doors of the boxes and the exit at the southern end of the building.

FIG. 32. Plate 14.

View of the interior of the cow stable.—(See fig. 24). Lateral passage to the right, from north to south, showing the arrangement and shape of the mangers along the alley used for the distribution of fodders. The position of the animals, with heads to the wall, is considered to be the healthiest.



Fig. 29. Reford farm. Harness room.



Fig. 30. Reford farm. Interior of the barn.



Fig. 31. Reford farm. Interior of the cow stable.



Fig. 32. Arrangement and form of the mangers

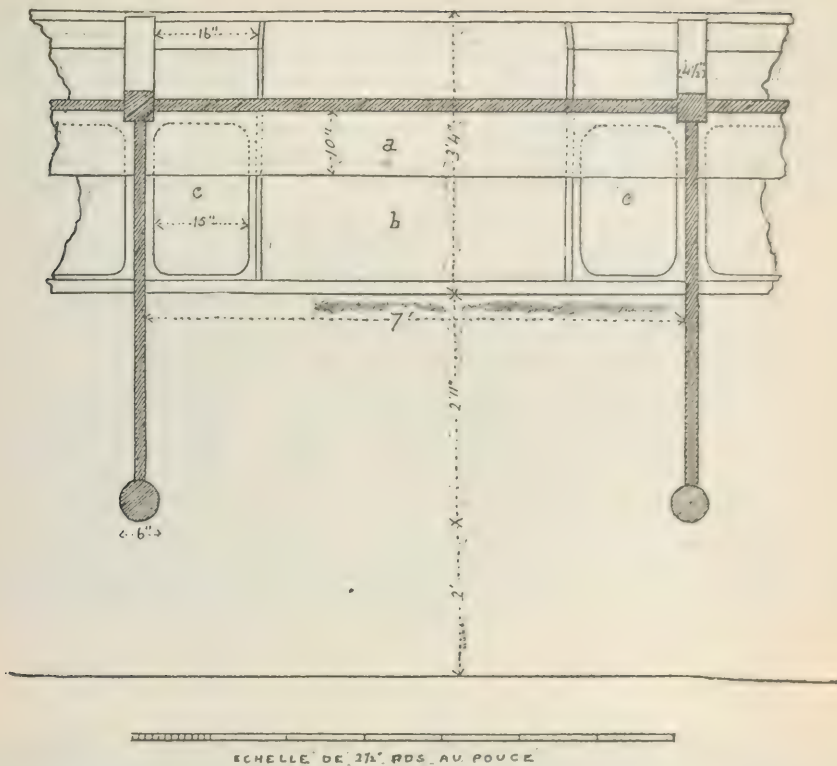


FIG. 33.

Horizontal plan of a large stall in the cow stable (see fig. 24) with the dimensions indicated. — *a*. Trough. — *b*. Manger. — *c*. Metal boxes or mangers.

Vertical section of a row of stalls, half the width of the stable. — *a*. Lateral feeding passage at the animals' heads. — *b*. Manger. — *c*. Metal trough in lengths equal to the width of the mangers and bolted together with sheets of lead between the superposed ends. — *d*. Plank of 8" x 2" forming the upper part of the front of the stalls before the top of the trough, and let into the division posts of the stalls. This piece of timber serves not only to strengthen the divisions, but also to prevent the fodder from falling into the trough. — *e*. Partition between the stalls in horizontal deals grooved and tongued and battened. — *f*. Iron staple of 5.8" x 17" to hold

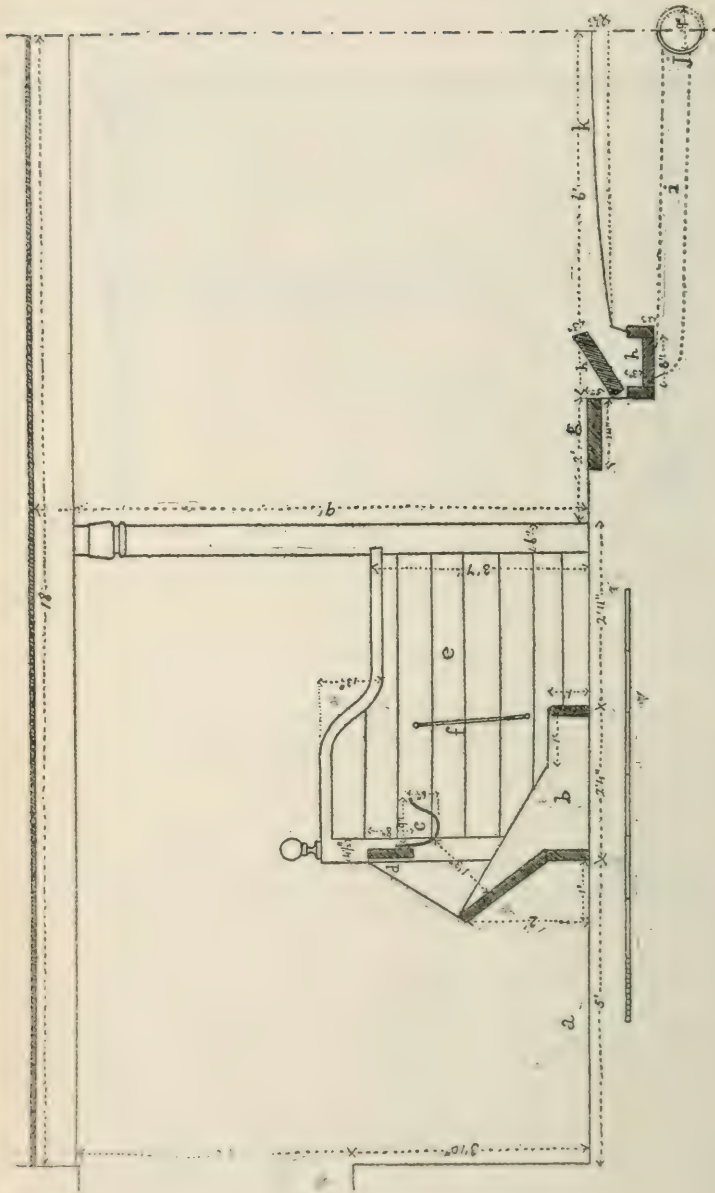


Fig. 34.—Reford Farm.—Vertical section of a row of stalls.

the ring of the tying chain.—g. Plank of 3" x 14" embedded in the cement forming the rear extremity of the pavement of the stalls and on



Fig. 35. Reford farm. Moveable partition in metallic grating, calf pens.



Fig. 36. Reford farm. Interior of the engine house.



Fig. 37. Reford farm. Weigh house and stable for fattening animals



Fig. 38. Reford farm. Western gable of the building with shed for agricultural implements

which rest the hind feet of the cows.—*hh*. Drain in the form of a spout made of tamarac planks, boiled in coaltar, and moveable plank, pierced with holes, serving as a cover thereto. This impermeable drain laid in cement and gravel, with a slope of 3" per 10 feet, collects the urine and discharges it into tile pipes of 6".—*i*. Falling into the central collector.—*j*. Of 9", leading to the liquid manure pit.—*k*. Half the width of the centre alley with a slope of 2½" towards the drain.—N. B. All the pavement is of concrete and cement laid on a solid foundation of broken stone and gravel.

FIG. 35. Plate 15

View of the moveable metallic grating partitions of the four calf pens; —*dd*. Cow stables. (See Fig. 24).

FIG. 36. Plate 15

View of the interior of the engine-house, showing the locomobile engine, pulley and shaft transmitting movement to the machines in the barn and to that in the feed room, in the wing containing the stable of the fattening animals and, in front of the chimney, a small steam boiler in galvanized steel to cook the feed and heat the water (1) This building is of stone and paved in concrete and cement. There was a pile of wood alongside of the chimney. N. B. The little boiler above mentioned seemed to us to be very saving in point of fuel, of which it requires very little, whether of coal or wood.

FIG. 37. Plate 16

View of the weigh-house and stable of the fattening cattle from south-east to north-west.

FIG. 38. Plate 16

View of the rear and of the western gable of the above building, showing the agricultural implement shed at the back and the projected creamery further to the east.

(1) NOTE.—Reliable feed cooker, water heater and evaporator, patented 1896. Rippley Hardware Co., Grafton, Ill.



Fig. 39. Reford farm. South Western view of the barn, with shed for poultry house.

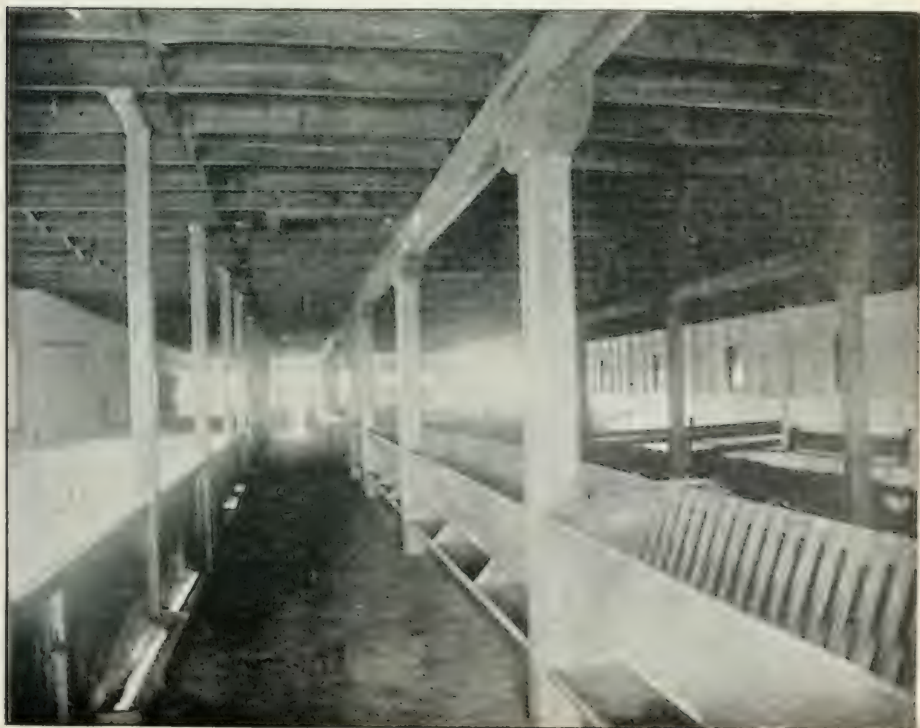


Fig. 41. Reford farm. Interior of the building for the fattening animals.

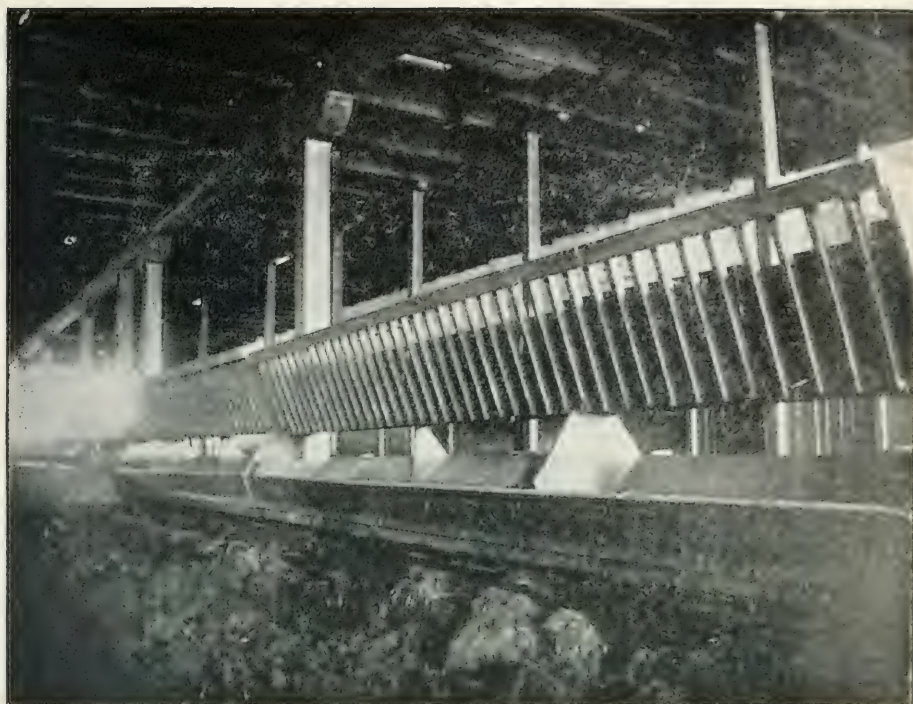


Fig. 42. Reford farm. Rack and mangers in the stable of the fattening animals



Fig. 46. Reford farm. Interior of the poultry-house.

FIG. 40

Ground plan of the building for the fattening animals, the implement shed which can also be used as a shelter for the stock on pasture in summer, the feed room, the silos and poultry house, with dimensions indicated.

I. Stable for the loose animals fattening.—*aa*. Mangers and racks.—*bb*. Fodder traps.

II. Implement shed.—*aa*. Sky-lights in the roof opposite those of the main building previously erected.—*bb*. Sliding doors.

III. Piggery.—*aa*. Pens for the pigs.—*b*. Passage from the feed room.—*cc*. Ventilators.

IV. Feed room and silos.—*aa*. Silos, 22" x 19" and 18" x 19" x 18" to 20" in depth, bottom in concrete and cement.—*k*. Trap for the ensilage and belt of the ensilage cutter.—*c*. Stairway leading to the loft above.—*d*. Grain bin.—*e*. Ground grain bin and spouts with drawers, fodder bin. There is also a three-wheeled feed waggon. The loft above communicates with the hay loft of the fattening stable.

V. Poultry-house.—See fig. 45, 46 and 47.

FIG. 41. Plate 17.

View of the interior of the building for the fattening animals taken from the end of the east passage.

FIG. 42. Plate 18.

View of the racks and mangers of the aforesaid stable taken from the cattle yard on the north-west.

FIG. 43.

Section and perspective of the rack and manger of the same stable—*aa*. Rack, with the side towards the alley and bottom of boards and the side towards the animals of bars of 2" x 2" and board partition *bb* at very 20 feet, as well as the manger below at every 6 feet—*c*. Manger—*d*. Post of the framework.

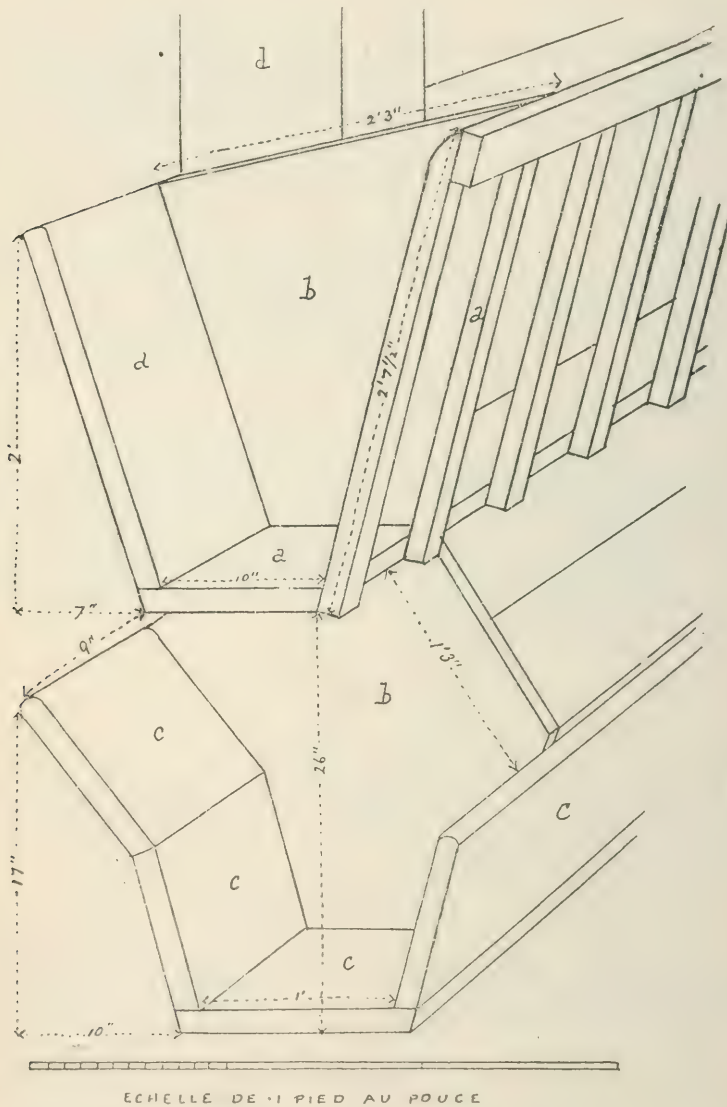


Fig. 48. Section and perspective of a manger.

N. B. Dry fodder is distributed in the racks and the cut and mixed fodder—ensilage, roots, ground grain, etc—in the manger into which falls also the hay that drops from the rack.

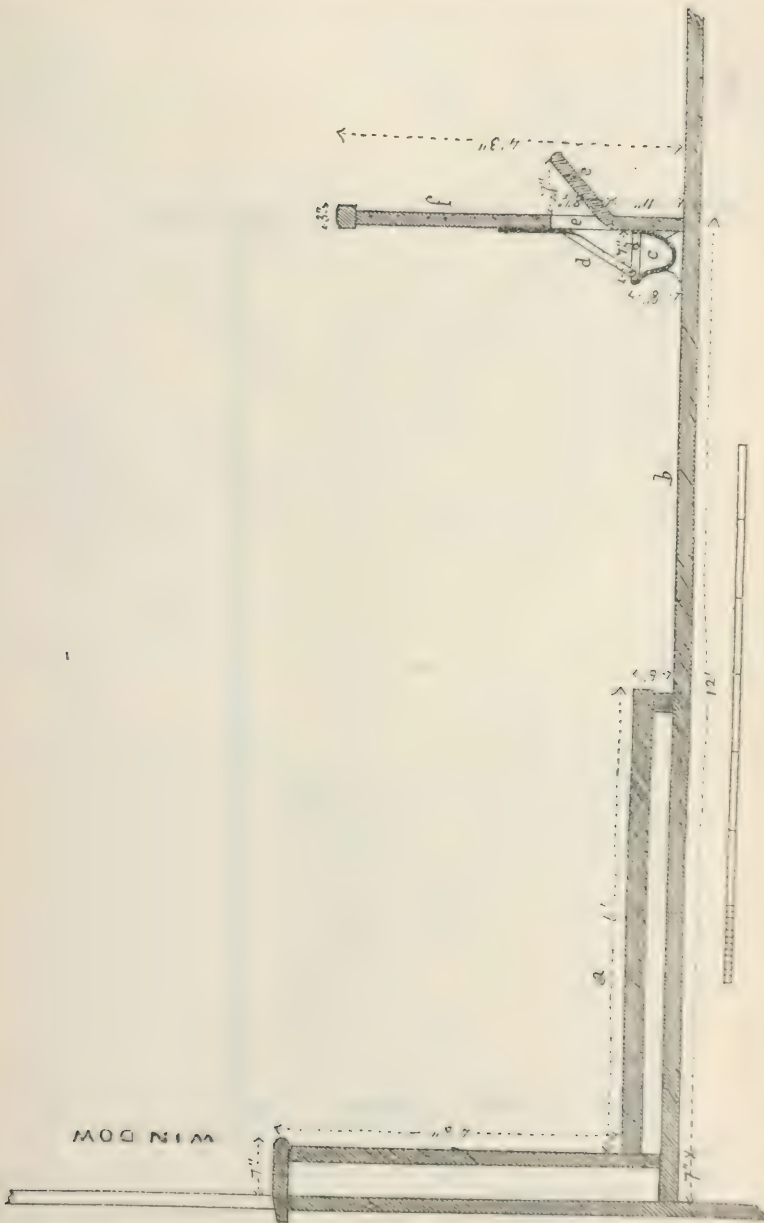


FIG. 44.

Section of the piggery in the fattening building—*a*. Platform for the

pigs' bed—*b*. Floor of deals—*c*. Metal trough divided into four by a flat bar of iron to which is bolted another bar of the same kind, twisted, bent into an angle and fixed to the partition—*ee*. Feeding wickets, with sloping shutter opening into the alley—*f*. Partition on the passage.

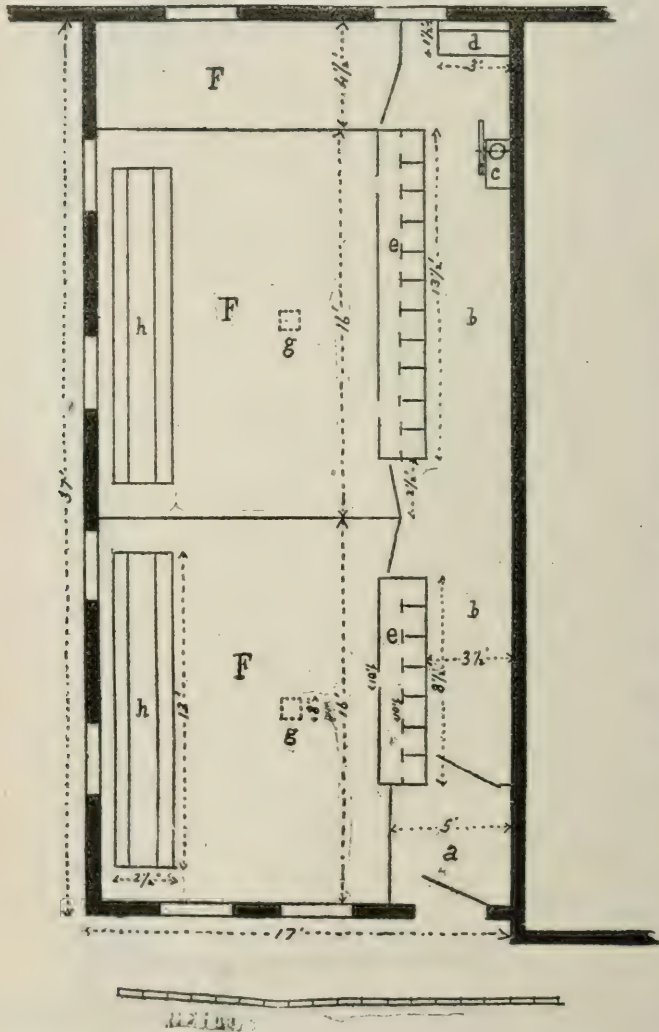


Fig. 45. Horizontal plan of the poultry-house.

Remarks.—A few pens intended for nursing sows are surrounded a

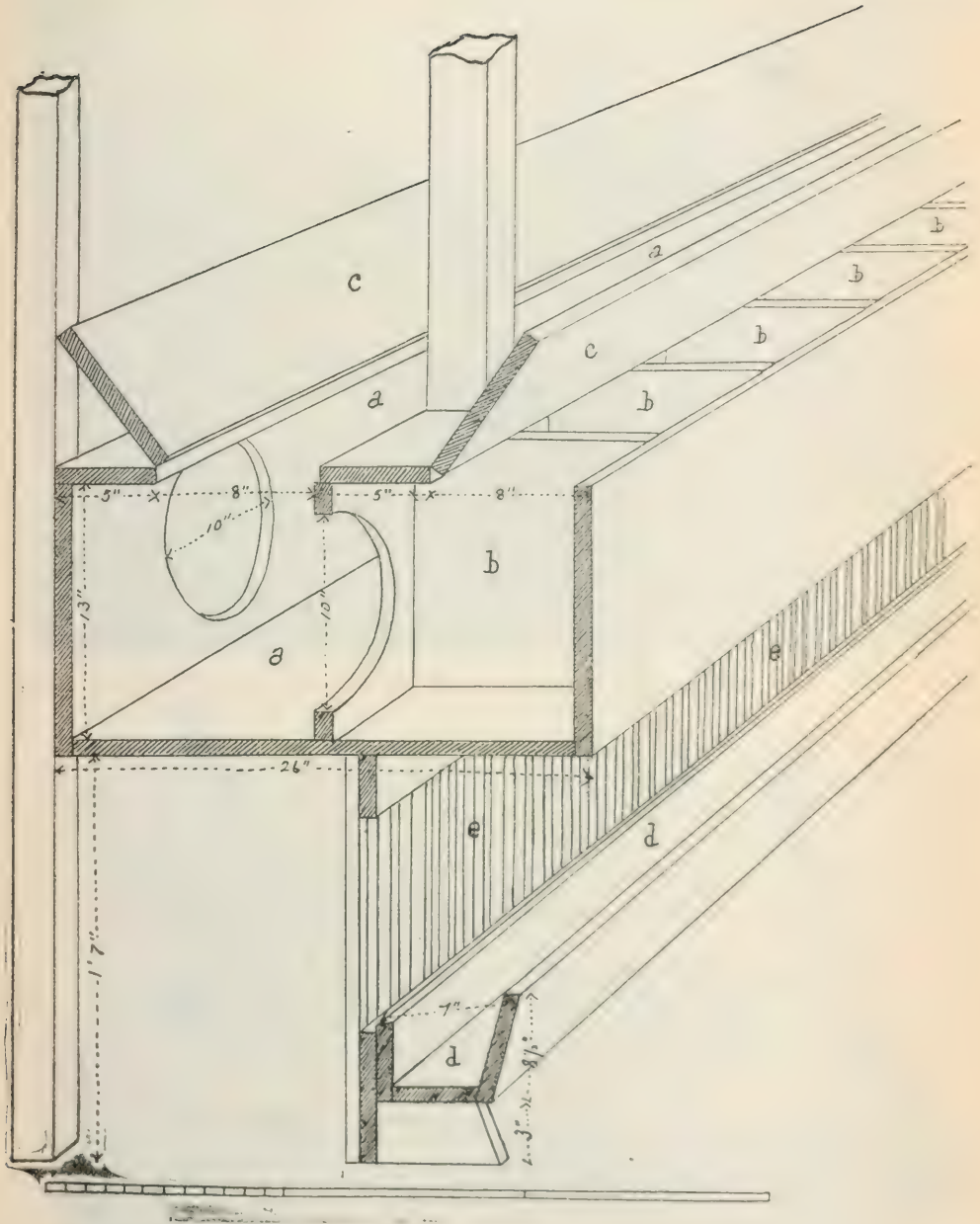


Fig. 48. Section and perspective of the nests.

few inches above the floor with deals placed horizontally to prevent them from crushing their young.

FIG. 45. (Page 194.)

Horizontal plan of the poultry-house—*a*. Vestibule—*bb*. Passage ; *c*. Bone-crusher ; *d*—Grain bin ; *ee*—Laying nests ; *ff*.—Compartments for fowl ; *qq*.—Ventilator : *hh*.—Roosts=2-6" wide \times 13' long on moveable trestles 18' high. The platform is surrounded with a vertical board skirting of 4", with openings of 9" to facilitate cleaning out. See fig. 46.

FIG 46. Plate 18

View of the interior of the poultry house taken from the southern end of the passage, showing the laying nests open on the alley in which they are, and the nests with their arrangement.

FIG 47. Plate 19

View of the interior of the poultry house showing the nests and the feeding troughs underneath, a metal basin for the water, &c. The separa-

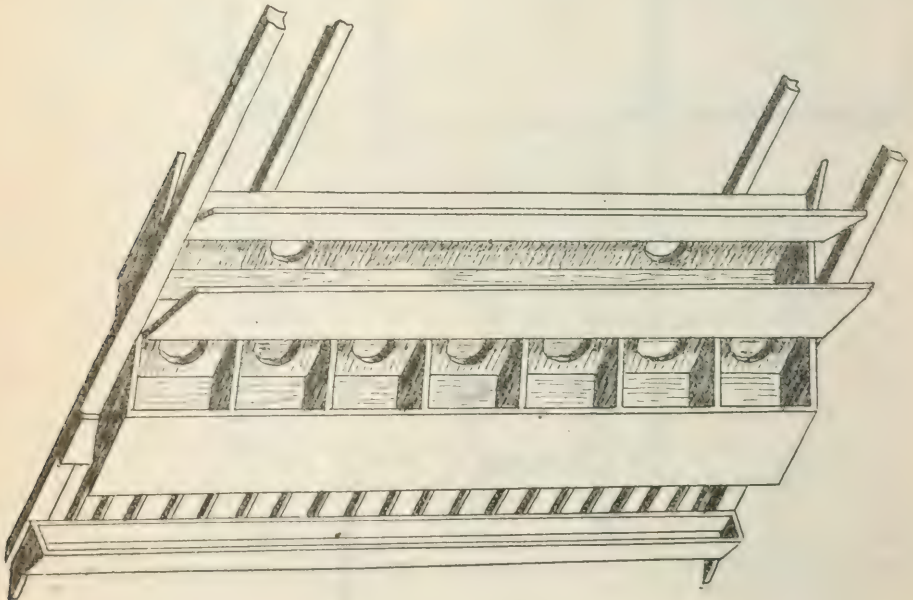


Fig. 49.—Perspective of the nests.



Fig. 47. Reford farm. Poultry house, showing the nests and feeding troughs.



Fig. 50. Reford farm. Front of the farmer house.



Fig. 51. Reford farm. Farm house and dairy, view taken from the South-West.



Fig. 53. Reford farm. View of the interior of the dairy.

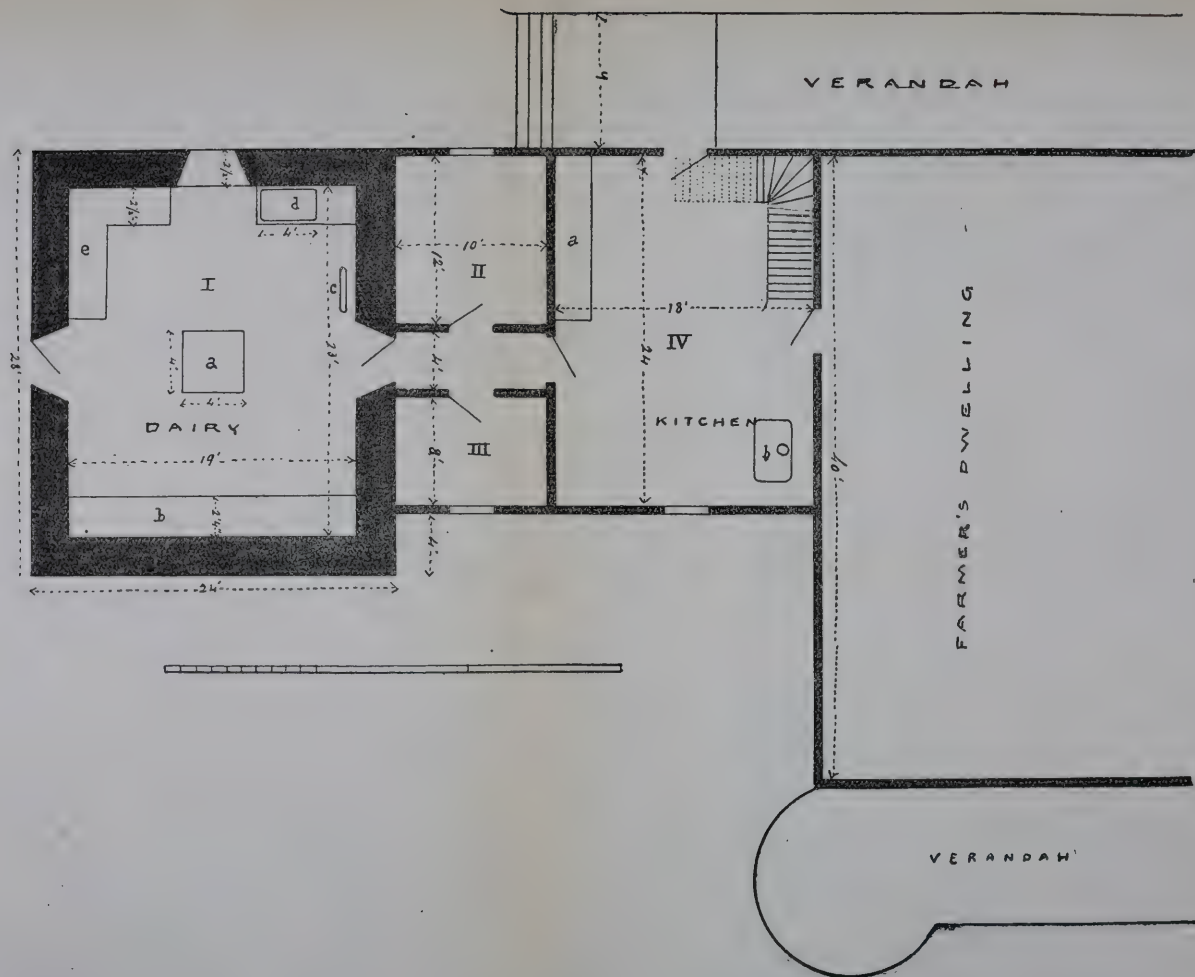


Fig. 52.—Reford Farm.—Horizontal plan of dairy, pantries and kitchen of farmer's lodging.

tion bars between which the fowls thrust their heads to eat and drink, the bone-crusher &c.

FIG. 48 (page 195)

Section and perspective of the nests, trough &c of the poultry house. *a* Antichamber or passage with 8" shutters provided with hinges into which, through a circular opening, enter the hens about to lay. At need, this opening is shut by a horizontal slide in the inside. This arrangement conceals the nest from the flock of fowl, keeps them in darkness and prevents the hens from eating the eggs;—*bb* Nests;—*cc* Hinged shutters closing the nest and passage;—*dd* Feeding troughs in the alley under the nests *e* Bars of 1" x 1" with spaces of 2½" between each, a board of 6" before the upper side of the trough, the latter being one inch higher than the side of this board. The divisions of the compartments are in planks for a height of 2 feet, the remainder being in metallic grating.

FIG. 49. (page 196)

Another perspective of the nests in the poultry-house, completing the details of their construction.

FIG. 50. Plate 19

View of the front of Mr. Reford's farm house taken from the lawn in front.

FIG. 51. Plate 20

View of the same and of the dairy taken from the South-West.

FIG. 52. Plate 21

Horizontal plan of the dairy, store-rooms and kitchen of the farmer's dwelling.

I. Dairy.—Stone walls, pavement of colored tiles of octagonal shape, with squares of different colors,—*a*. Centre table 4' x 4'—*b*. Marble table of 2'-4" broad occupying the entire breadth of the dairy,—*c*. Radiator,—*d*. Sink and table,—*e*. Slate table:—In addition, the moveable utensils, enamelled basin; 2 Daisy churns making butter in 15 minutes, half-filled with cream; small portable ice-chests for the pressed butters, small tinned metallic plates for pressing the butter, parchment paper, little triangular butter-working table. There is a central gutter in the floor which slopes towards that spot. Central ventilator, door and windows equipped with wire screens, &c.

II. Store-room or winter dairy.

III. Store-room for the use of the family.

IV. Kitchen, *a.* Table ;—*b.* Stove.

FIG. 53. Plate 20

View of the interior of the Dairy.

FIG 54. Plate 22

View of the field of ensilage corn mentioned in this report.

FIG. 55. Plate 22.

View of a bundle of ensilage corn, 13 feet in height, cut from the above field in the 18th August: *Southern Sweet* variety, the yield of which is estimated at 35 tons to the acre.

FIG. 56. Plate 33.

View of Mr. Reford's herd of cows in the pasture to the west of the farm.

FIG. 57. Plate 24.

View of the bull "Lord Duddley", No 12.298 ; aged 3 years, imported from Scotland.

FIG. 58. Plate 23.

View of Mr. Boden's two little boys and girl each holding an Ayrshire cow.

FIG. 59. Plate 25.

Heifer "Blue Bell First," of Hillhouse, No 12287, aged 2 years, imported from Scotland.

FIG. 60. Plate 26.

Group of young cows.—To the left, "Blue Bell First" (fig. 58*a*), in the middle "White Rose", of Fairfield, No 12235, aged 4 years, imported



Fig. 54. Reford farm. Field of ensilage corn.



Fig. 55. Reford farm. Sheaf of ensilage corn.



Fig. 56. Reford farm. Herd of cows.



Fig. 58. Reford farm. Ayrshire calves



Fig. 57. Reford farm. Bull Lord Dudley. Imported from Scotland.



Fig. 96. Reford farm. Heifer Blue Bell First.

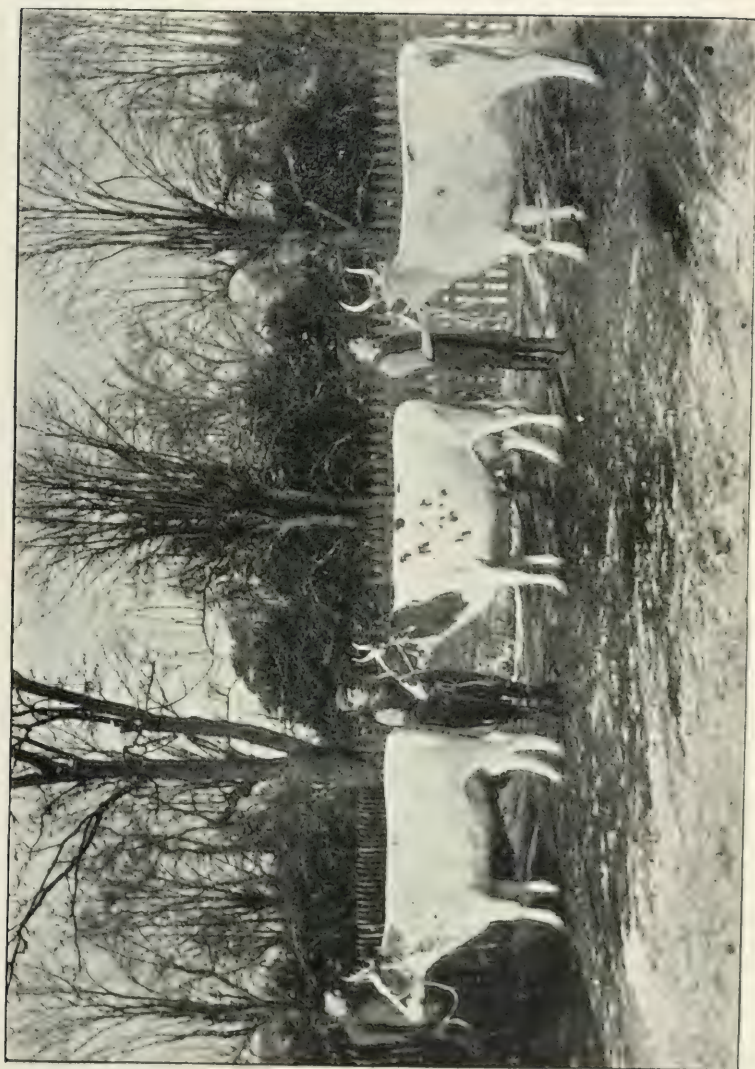


Fig. 60 Rufford farm. Group of young cows



Fig. 59. Part of the flock of Shropshire sheep.



Fig. 64. Levac farm. View of the barns and stables, taken from the South side.

from Scotland ; to the right, " Queen Bess Fifth, of Barcheskie, No 12289, now 5 years old, imported.

FIG. 61. Plate 27

View of a portion of Mr. Reford's flock of Shropshire Sheep in the pasture.

John Nesbitt.—Petite Côte County of Hochelaga (91 $\frac{1}{100}$ points).

For the second time, Mr. Nesbitt enters his farm for the competition, this time for the gold medal, having already won the silver medal in 1890. (See the report of the competition of that year for the plan and description of his farm.) But Mr. Nesbitt's present farm is only the western half of the first, as the farm that competed in 1890 was subsequently divided into two equal parts between his brother and himself. Since then Mr. Nesbitt has erected for himself a splendid residence and excellent farm buildings on his property, which is now only 63 acres in superficies. In addition, he has planted a fine orchard, which is only 6 years old and which promises well. Mr. Nesbitt stands this year at the head of the competitors of his class, professional farmers, working on their land and living upon the revenue therefrom.

We regret that the law relating to the Agricultural Merit competition has not established two classes of competitors : the class of amateurs or owners of farms, whose products do not constitute their principal source, as, for instance, Messrs. Ogilvie and Reford, the Seminary of Ste. Thérèse, &c., and the class of true farmers, like Mr. Nesbitt and the other competitors. If this had been the case, Mr. Nesbitt would be entitled to the gold medal which he merits and which Mr. Ogilvie seems to have the right to claim. If we might be permitted to make a suggestion to the Government, it would be to amend the law in the sense indicated and to grant two medals. Needless to say that this amendment would be well received by the farmers who desire it.

Mr. Nesbitt's farm is at the door of the great Montreal market, which is at the same time an immense source of manure.

Its soil is, for the greater part, light and calcareous, being more clayey or more substantial in the northern part, where the land is lower and

deeper. The soil along the front is not very deep, the underlying rock being at some points only a few feet from the surface. It is a warm soil requiring frequent organic manuring, but still fertile and eminently suited to market gardening.

Mr. Nesbitt has happily turned these conditions to good account by adopting a system of working which enables him to benefit by the advantages of the market and the manures needed by his farm and his crops. The speciality of his system therefore is the raising of vegetables for the market ; and his success in this kind of tillage does not appear doubtful, judging from the abundance and the admirable state of his crop and the careful perfection of his farming, etc.

Division.—The farm contains only a few fenced fields, in which meadow, pasture, grains, etc., alternate. The remainder is unfenced, being laid down in continuous crops, and the plots being only separated by the upright furrows. Thus, there is not an inch of ground lost. All the land is drained and stoned ; it was formerly rocky, as evidenced by the great extent of stone fencing. The insufficiency or the imperfection of the drainage was only observable at one spot where the crop had suffered in some slight degree from the excessive rains, but everywhere else the cleanness and the condition of the soil and the crops attested its efficacy.

Extent of the crops examined :

Oats, 10 acres ;—table beets, 1.25 acre ;—turnips, 1 acre ;—Swedish turnips, 3 acres ;—white carrots, 3 acres ;—red carrots, 3 acres ;—onions, 1.75 acre ;—parsnips, 1.50 acre ;—potatoes, 22 acres ; Indian corn for grain, 2 acres ;—Indian corn for ensilage as a snatch crop after early potatoes, 3 acres ;—meadow, 5 acres ;—pasture, 4 acres ;—green fodder, 1 acre ;—orchard, 1.50 acre ;—small fruits and kitchen garden plants in the orchard.

As a consequence of his system, Mr. Nesbitt has only 20 acres in grain, hay and pasture and, apart from his working and carriage horses, he only keeps a few cows for the wants of his house, a few pigs to consume the refuse of his crops and a few dozens of Plymouth Rocks and

Leghorn hens. He buys bran, grain and hay and he furnished us with the following report of the quantities of these purchased by him last year :

Bran, 2 tons ;—oats, 400 bushels ;—hay 8½ tons.

On the other hand, here were the amounts of his sales :

A fat heifer	\$ 32.00
Potatoes.....	1,894.23
Carrots.....	556.30
Turnips and Swedish turnips.....	180.05
Beets .. .	111.95
Parsnips.....	119.10
Onions.....	196.74
Ever-green Indian corn (in the cob).....	62.00
Pumpkins.....	23.00
Rhubarb.....	24.00
Gooseberries..	22.00
Eggs and fowl.....	27.10
Milk sold at the house.....	203.85
<hr/>	
Total	\$ 3,458.32
Expense given.....	1,960.00
<hr/>	
Balance.....	\$ 1,508.32

Representing the earning or the interest on the working capital.

Mr. Nesbitt purchased last year 1000 loads of stable manure, 30 barrels of plaster and ½ ton of phosphatic scorïæ (Thomas' phosphate).

ROTATION

1. Potatoes.
2. Carrots, turnips, beets, onions and Indian corn.
3. Potatoes.
4. Same crops as the 2nd year.

5. Potatoes.
6. Same crops as the 2nd and 4th years.
7. Oats, with fodder seeds.
8. Clover meadow.

In this rotation of hoed crops, care is taken to grow the same plant on the same plot of land only as unfrequently as possible.

Mr. Nesbit ploughs deeply, as much as he can do so without turning up the barren sand or gravel.

The drainage is by tile pipes ; still there are some drains of stones taken from the surface of the soil. For seeding purposes, Mr. Nesbitt always selects the largest, heaviest and ripest seeds. He does not buy all his seeds of the same kind in the same store in order to avoid too heavy losses in the event of bad quality.

The manure is usually placed in a large heap on the field where it is to be used, until it is properly rotted. It is then spread over the surface and immediately ploughed in.

The meadow, being only kept for one year, receives no special care. The pasture receives no other fertilizer but the droppings of the animals which are partly fed there upon green fodder and the refuse of the crops. The droppings are carefully spread.

Manuring.—The stable manure carted during the summer and allowed to rot is applied in the fall and buried with the plough for the Indian corn and potatoes ; however, a part of the latter, as well as the turnips and Swedish turnips are manured in the spring with dung carted in winter. The manure is turned into the ridges for the Swedish turnips. The onions, carrots and beets receive no manure. The same land is manured every two years.

The garden and orchard are manured in autumn and the manure is buried with the plough.

This pretty corner of the farm is a model of intensive culture and of useful ornamentation to the surroundings of the farm house. The rows of apple trees are garnished between the trees with gooseberry, currant and raspberry bushes, &c., and the space between the rows is utilized for different kinds and varieties of vegetables for the table and for market. The trees are young, but have a fine appearance.

Mr. Nesbitt only makes about fifty feet of hot beds (1).

Mr. Nesbitt told us that he had purchased some of the Standard fertilizer and spent in this way 50 cents per row of potatoes, which produced 25 per cent less tubers per row; but the stalks looked very much better. This experiment showed a difference of 75 cents per row or of \$18.00 per acre in the revenue.

225 lbs. of Thomas scoriæ spread in autumn as a dressing for the onions and potatoes did not produce any marked effects.

The Standard was used in the spring, followed by a dry summer, which probably accounts for its small success. On the other hand, the stable manures, carted from the city, being relatively rich in phosphoric acid, would render the phosphatic fertilizers useless.

For Mr. Nesbitt's land, stable manure is therefore the best fertilizer.

Food of the Pigs.—Cooked potatoes, butter milk and ground grain, with peas during the last month to complete the fattening and impart more firmness to the meat.

Food of the Cows.—Indian corn ensilage, bran, roots and hay.

Buildings.—Mr Nesbitt's residence—as already mentioned—is a handsome two storey wooden house with a broad veranda, well painted, coquetish and neat both within and without, provided with all the modern improvements and very comfortable. It is reached from the public highway by a fine avenue traversing the orchard in front.

All the farm buildings are well constructed, well equipped and comfortable, but without luxury.

(1) Tests of chemical fertilizers.

Among other details, we noted a cylindrical silo of 10' in diameter x 18' in height, paved with cemented stones; the staves are $5\frac{1}{2}$ " wide by 3" thick hooped with 9 steel cables of $\frac{1}{8}$ " bound together by a screw bolt allowing the staves to be tightened or loosened at need according as they dry or swell. It is an excellent silo, a model of a water-tight silo, of simple and easy construction, looking like a big, long tub slightly narrower at the bottom than at the top.

In the lofts, we noticed a compartment for grain, 9' x 20' x 6' 3" in height, covered with sheet iron and proof against rats and mice, and also a number of apple boxes provided with moveable divisions in pasteboard, each box being calculated to hold 320 Fameuse apples of normal size, There were also boxes for 100 larger apples. These boxes cost 30 cents. with the pasteboards.

The barn is built so as to facilitate the use of the mechanical fork, with which it is supplied.

Mr. Nesbitt has an ice-house, with a cool chamber and improved refrigerator. In the cellar of the house is a water cistern with a capacity of 5,250 gallons, constructed of brick and cement.

Mr. Nesbitt enjoys the reputation of being an excellent farmer, a reputation already gloriously attested by the silver medal of Agricultural Merit and by several other prizes in utensils and objects of art in silver offered by private parties or by the County of Hochelaga Agricultural Society, for the best buildings, the best order kept on a farm, etc. This is why the Commission would see with pleasure his merit rewarded by the gold medal.

JOS. ADOLPHE CHAURET, ESQ.

Ste. Geneviève de Jacques Cartier.—Competitor for the gold medal (89.25 points.)

Mr. Chauret is a laureate of the last competition, when he was decorated with the silver medal. He possesses the merit of making many sacrifices of money and of knowing how to carry out intelligently

enormous works for the improvement of a soil to the extent of conquering it in a measure from the rock, the swampy low grounds and the stony hills and transforming it into a clean farm everywhere ploughable and productive. He really deserves well of the country who succeeds in getting *two blades of grass* to grow where not even one grew before. Mr. Chauret has given to his farm the appropriate name of *Pierrefonds*, seeing that the few feet or the few inches in some spots, of his soil, rest on a rock bottom. We append a plan of his farm in the subjoined figure.

FIG. 62. (Page 206.)

Plan of the farm of Mr. J. A. Chauret &c. This is a scaled plan, in which all the divisions in walls of dry stones are indicated. It does not show, however all the extraordinary improvement works carried out on this farm, in the form of drainage, levelling, stoning, utilization of stones for fencing, bridge-building, gate-building &c.

Since the last competition in this region, Mr. Chauret has built a new stone bridge, has completed another, stoned 7 acres in superficies, which have been cultivated for three years and which were previously barren or only fit for permanent pasture.

He has made 30 linear acres of fencing in stone measuring 5 feet thick at the base and 3 feet at the top with an average height of 4 feet. All the fences of this nature have been skilfully made straight, regularly sloped, stones well laid, with broken joints at each range, some are over and some in the ground, but the rock not being far off, the soil is not lifted by the frost. It is durable work. Mr. Chauret claims to have removed from the surface of his farm and utilized as aforesaid and in his other constructions 90,000 loads of stones, which, at 20 cts a load, forms the handsome sum of \$18,000.00. This is a figure to scare a small farmer. But, whatever may be thought of it, Mr. Chauret, carried away by his agricultural taste and knowledge, has nevertheless increased the productiveness and the real value of his land and thereby also the wealth of the country.

The other works executed since 1895 are : $8\frac{1}{2}$ linear arpents of drainage, $3\frac{1}{2}$ of which are collecting drains, removing a spring injurious to the crops at a certain point, besides 2 arpents of covered ditches on the gravel.

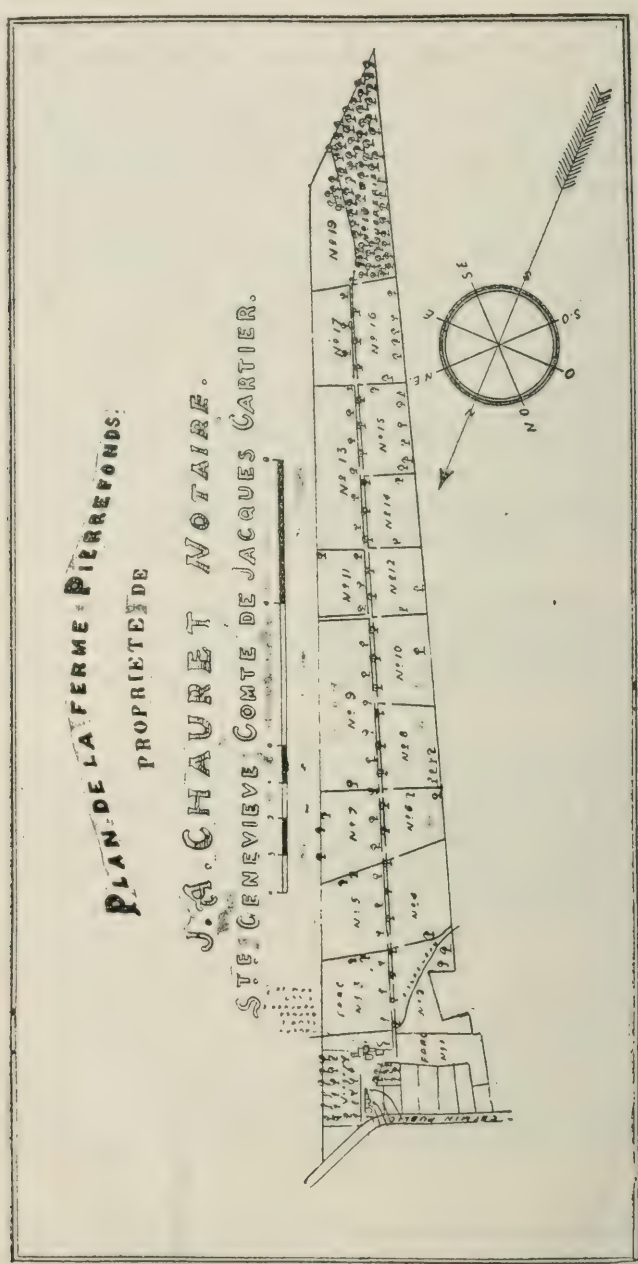


Fig. 62.—(See page 205)

The avenue, upon which all the fields of the farm debouch, contains

two wells supplied with a pump and trough, where the stock can drink at will, for this avenue, perfectly levelled from one end to the other, is not only a good carriage road, but also a permanent pasture clothed with good grass and kept in constant communication with each pasture. It is bordered with young maples, planes and elms planted in quincunx at about sixty yards distance from each other.

We note, both as an artistic and an economical speciality as well as a measure of order, the fact that the number and the extent of each of the fields of the farm are painted in letters of different colors on the gate communicating therewith. All the gates are solid and painted red.

Mr. Chauret's system of working is a mixed one, varied crops with cattle, the main object being milk production.

Rotation.—1 Indian corn and potatoes on fallow or meadow, without manure ; 2 Buckwheat sown early and ploughed in followed by another sowing for crop 3 Same crop with fodder seeds buried by a stroke of the harrow after sowing ; 4 and 5 meadow ; 6 and 7 pasture, which sometimes last longer by manuring the field.

Another rotation is followed on other parts of the farm, with two hoed crops after meadow.

1 Potatoes on meadow, followed by one or several hoed crops with manure on certain fields and green fodder after potatoes.

The green fodder—oats and lentils—is sown at four intervals, together with 12 lbs of clover to the acre. The following years, the first cutting of clover is harvested and the second growth is ploughed in. This field bears the next year a crop of barley or wheat. From 3 acres of wheat thus grown Mr. Chauret has harvested 70 bushels.

He fallows accidentally in order to destroy the couch-grass.

Mr. Chauret raises several acres of Indian corn of the Red Cob Butter and Mastodont varieties, the stalks of which he keeps in sheaves and which he cuts as needed by the stock : he also grows several kinds and varieties of roots, marrow kale, &c., which, he says, saves hay and grain

for him. The Indian corn and the roots replace the bran that he used to buy in the autumn. The leaves of the vegetables are also fed to the animals.

He uses the Indian corn shellers and the hand seeders which the farmers' club of the parish has purchased to the number of four of each kind.

The heifers calve at two years old. The milking period of the cows is from 9 to 10 months.

Mr. Chauret sells peas for soup-making and some hundreds of bushels of oats, besides four or five tons of carrots, to pay for his farming expenses.

The principal source of revenue on the farm is the herd of cows, whose milk is conveyed to the neighboring creamery, which yielded him last year \$23.33 per cow, apart from the domestic consumption.

At the time of the Commission's visit, the cows that had calved early in the spring were giving 22 to 29 lbs of milk per head and a good return to the creamery.

The stock numbers 17 head, of which 8 milch cows are of the Guernsey breed, pure and grade.

As regards the buildings, we desire to make special mention of a fine, large, well ventilated vegetable cellar with walls of stone.

The state of the crops, which were however well sowed and kept, seemed to us to be in general capable of being better in point of yield; which is the reason that prevented the competitor from ascending higher in the scale of points.

The generally shallow and somewhat light, and warm soil of Mr. Chauret's farm needs to be further enriched in humus, in order that it may retain longer in summer the necessary proportion of humidity and that it may supply more nitrogen to the plants.

Tests with chemical fertilizers, without appreciable results, seem to demonstrate that this soil, newly conquered in a way, is still sufficiently rich in mineral elements suited to the nutrition of the plants.

Book-keeping.—It consists of a journal of expenses and receipts from the farming operations :

Receipts.....	\$665 09
Expenses.....	355 58
Profit.....	<u>\$309 51</u>

apart from the milk, butter and potatoes taken by the farm hand for his own consumption, which is valued at \$25.00, making the total profit \$334.51. Now that his land has been thoroughly cleared of stones and improved, Mr. Chauret can hope for constantly increasing and more remunerative returns upon his noble work.

Remarks: —We have awarded to Mr. Chauret, for his great real improvements as a whole, the sum of 15 points, which exhausts the limit of the programme for that object. Still Mr. Chauret would have reason to be dissatisfied, for, in the case of certain improvements, he would deserve more points than he has been allowed as compared with other competitors for the same work. If we could award him a further $1\frac{1}{4}$ point, namely, for drainage, 0.75 point, for green manuring, 0.25 point and for liming 0.25 point, the total of his points would amount to 90.50, which however, would only leave him on the same footing.

DAMIEN PILON.

St. Benoit, county of Two Mountains (87.25 points).

Mr. Pilon is a competitor for the gold medal, having competed in 1895 for the silver medal with which he is decorated. His farm is situated about half a mile from the village, five miles from the steamboat landing on the Ottawa and seven miles from the C. P. R. station. It is a historic farm acquired from the Girouard family and with which are associated touching memories of the events of 1837. It is favorably located between two little rivers—the upper branches of the Rivière des Chênes—which bound it at the two ends and facilitate its drainage. Its superficies is 237 acres, 212 of which are under tillage. It is traversed in its entire breadth by a

private avenue, provided with a gate, which is only the continuation of the public road. This avenue communicates with all the fields on each side. The gates of opposite fields are advantageously placed opposite each other and open on the road so as to close the latter, which thus facilitates the driving of the stock. The avenue or entrance to the house and farm buildings has its opening on this road, which is splendidly kept. All the fields extend from this avenue to the two streams bounding them at their other extremity, which is a good division and renders communication easy with all parts of the farm.

Soil.—The soil is clayey over the greater part of the farm and hardens and cracks at several points. The southern part near the brook is a yellow mould, with a clay subsoil, which does not seem anywhere to possess much permeability. It is a variety of soil belonging to the group commonly called white earth. Its texture is not excellent, although it may be good. Underground drainage and deep ploughing seem to be the operations best adapted to the improvement of such land. It appears to be of good mineral composition, but poor in organic matter and nitrogen. This was successfully demonstrated by the tests made this very year by Mr. Pilon with chemical fertilizers. Here is what we ascertained for our own information and that of the agricultural class. Field of oats :

Plot No. 1. Test plot ; no fertilizer of any kind, one crop.

Plot No. 2. Superphosphate of lime, 6 lbs ; nitrate of soda, 3 lbs ; 3 crops, as far as the eye can judge.

Plot No. 3. Chloride of potassium, $1\frac{1}{2}$ lb ; nitrate of soda, 3 lbs ; $3\frac{1}{4}$ crops.

Plot No. 4. Chloride of potassium, $1\frac{1}{4}$ lb ; superphosphate of lime 6 lbs. ; $1\frac{1}{2}$ crops.

Plots No. 5. Chloride of potassium, $1\frac{1}{2}$ lb ; superphosphate of lime, 6 lbs ; nitrate of soda, 3 lbs. ; 3 to 4 crops.

Plot No. 6. 300 lbs of barnyard manure ; $1\frac{1}{2}$ lb of chloride of potassium ; 6 lbs of superphosphate of lime, 3 lbs of nitrate of soda ; $3\frac{3}{4}$ to 4 crops.

Plot No. 7. 300 lbs barnyard manure, $1\frac{1}{2}$ lb chloride of potassium, 6 lbs superphosphate of lime ; $\frac{1}{4}$ to $1\frac{1}{2}$ crops.

Plot No. 8. 300 lbs barnyard manure ; $\frac{1}{4}$ crop.

We may have erred a little in estimating the comparative yields of the test plots, but our slight mistake cannot attenuate the importance of the lesson to be drawn from this experiment.

All the plots that were treated with nitrate of soda (or nitrogen), namely : Nos. 2, 3, 5 and 6, gave 3 crops and upwards, while the plots Nos. 4, 7 and 8, which received no quickly soluble nitrogenous fertilizer, did not yield half the return of the former. The barnyard manure did not produce the effect that might have been expected from it. Perhaps it had lost too much of its soluble nitrogenous properties. But unquestionably the natural coldness of the soil, coupled with the low, dry temperature of the long spring, had the effect of retarding the nitrification of the organic nitrogen of the manure, and preventing its utilization by the crop of oats at that season.

Barnyard manure is therefore a fertilizer of too slow a decomposition to be applied in spring to cereals with as much advantage as to other crops that occupy the soil longer. The potash seems to have produced some effect or one more marked at least than that of the phosphoric acid.

The conclusion and the practical lessons that Mr. Pilon and, with him, a good number of the farmers of St. Benoit should draw from his experiment, seem to us easy : the element of fertility most needed by Mr. Pilon's land and that should be supplied to it in order to obtain heavier crops of grain is beyond question nitrogen and, may be also, a little potash. But by what economical process can this be done ? We told Mr. Pilon : by sowing clover and feeding it with a little ashes spread over it in the autumn of the same year, by harvesting the first cutting the next summer and ploughing in the second growth and further by sowing clover among all the cereals. This plant enriches the soil with nitrogen, which it extracts for its own nourishment from the atmosphere. Until proof to the contrary, we are convinced that this practice would almost double Mr. Pilon's crops and those of most of the farmers of St. Benoit, whose lands

do not seem to be any richer in organic matter and nitrogen. Mr. Pilon's experiment also demonstrates the loss suffered by the farmers who do not take judicious care of their barnyard manures, which cannot produce an immediate nutritive effect upon their crops because they have lost, through the filtering floors of their stables, exposure to the rains and overheating, the greater part of their urine and their immediately assimilable potash and nitrogen.

Mr. Pilon has merited a "*good point*" for his happy initiative and the far-bearing economical lesson which he has taught to himself and to all the farmers of the country.

Cropping System.—Mr. Pilon gave us his rotation as follows and it is apparently the one which he follows :

1. Peas and oats on fallow ;
2. Hoed crops with manure ;
3. Barley and oats, mixed, with fodder seeds ;
- 4, 5 and 6. Meadow.

7, 8 and 9. Pasture. For the 9 fields of 18 acres each. This period of 6 years in turf for lands of the texture of Mr. Pilon's seems to as to be too long ; it should at least be broken by the application of manure as a dressing in the fall of the 6th year and re-seeding with clover the next spring.

The 3 eight acre fields are subjected to another rotation :

1st year. Peas and oats ;

2nd year. Wheat, manured the previous autumn, with fodder seed. Sometimes the manure is replaced in whole or in part by chemical fertilizers ;

3rd and 4th year. Meadow ;

5th and 6th year. Pasture.

This 6 years' rotation seems better than the preceding one, taking it for granted that the manure, with good properly rotted dung, is applied

to and mixed with the soil after the crops by ploughing or grubbing, followed by an ordinary good ploughing at the end of the season.

Here now are the details which Mr. Pilon gives of his practice in his entries for the competition and of which it was difficult for the Commission to establish the execution or non-execution :

Depth of Ploughing.—9 inches in heavy loam breaking sometimes with the subsoil plough for hoed crops.

Ditches and trenches are made with the horse shovel. Seed grain is carefully sifted and a certain quantity is picked by hand every year.

Manures.—Sawdust is carted in winter to absorb the liquid manure. The manure is placed under a shed near the stable door and then, from time to time, conveyed to the field in which it is to be used and where it is placed in big square heaps of 4 feet in height, covered with sawdust or straw, in order to prevent the escape of the ammonia.

Meadows and Pastures.—The meadows are sprinkled with liquid manure diluted with water, by means of a mechanical horse sprinkler.

Hoed Crops.—Ordinary ploughing and breaking up with the subsoil plough in the fall, fresh ploughing in the spring, thorough harrowing and pulverisation with the disc harrow. Manuring with barnyard manure and chemical fertilizers, use of the mechanical planter for the potatoes.

Orchard.—Pruning of the trees in the spring—during the decline of the moon in March.—Ground slightly fertilized every year so that the trees will not make too much sap and that the bark will not split.

Feed of the young pigs for slaughter.—Green fodder and buttermilk during 5 months ; then buttermilk and ground grain for 5 to 6 weeks before killing.

Feed of the cows.— Summer : grass and green fodder ; autumn, chopped clover cooked by steam, roots and straw ; winter : chopped clover and straw ; spring : chopped clover heated by steam, straw, ground grain ; a few days after calving : roots.

Feed of the Sheep.—Clover and a little oats; after lambing : wheat bran and oats.

Remarks.—Mr. Pilon should understand that the cooking of fodder does not increase the proportion of digestible nutriment and that the practice of habitually feeding cows with warm foods has a weakening effect upon their digestive system and is only advisable in the morning during severe cold spells, especially when the stables are not warm. Some prefer to wet the chopped dry fodders and to allow them to undergo a beginning of fermentation which softens them, renders them more easily digestible and warms them a little without cooking the albuminoids as by steam.

Real Improvements.—Mr. Pilon has made some real improvements such as land clearing, stoning, underground draining—stone drain of 3 arpents—removal and spreading of all the earth thrown up from the ditches, &c.

The condition of the crops might have been better in some fields. But we attributed this partly to the unfavorable conduct of the season for the nature of the soil. In some fields, however, the rather marked convexity of the ridges on the sides of which the grain was shorter and thinner than towards the middle, indicated a slight defect of tillage and appeared to be a cause of the less abundant yields. Otherwise, the farm is well drained, suitably fenced and its cultivation as a whole is good.

Stock.—The herd of cows is of the Canadian breed, 7 of which and the bull are registered. Five had not calved last spring. The yield of milk was at the rate of 380 lbs per day on the 20th July. We appraised the quality of the cattle at 80%.

Book-keeping.—Mr. Pilon takes an annual inventory and keeps a book of expenses and receipts in money for all purposes, a book of special accounts and reference, bills payable and receivable &c., in a word his system of account keeping enables him to clearly see the state of his business. On the 31st December last, his receipts were..... \$1,302 80 and his expenses..... 318 38

Leaving as a surplus of receipts..... \$984 42

The balance sheet of receipts and payments fyled with his entry, gives \$2,158.24 as the surplus of receipts. We did not verify this figure by his books.

Success.—When Mr. Pilon entered into possession of his farm eight years ago, he was \$1500 in debt, besides owing the whole of the purchase price of his new property \$6,666.67, which was payable by annual instalments. At present, he still owes \$5,709, but he has made a marked improvement in the land and buildings and has passed through the hardest part of the ordeal. His creditor told us that he knows how to make money and that he meets his payments punctually.

The medals won by him and his sons in the ploughing matches of the County of Two Mountains attest his skill and that of his family, which is not one of the least of the factors in his success. Mr. Pilon is a jack-of-all-trades. He is provided with tools for working wood, &c., repairing implements, vehicles, &c. He seems to be well seconded by his wife and daughters, who do their large share of the work in the household.

Mr. Pilon is certainly a good farmer, who has climbed the ladder of merit, but its top is still above his head.

STE. THERESE SEMINARY

This farm of 200 acres had been entered for the second time—that is to say, for the gold medal—a silver medal having been awarded to it in the competition of 1895 (see report for that year.)

The procurator, who has the general management of the farm, was absent in Europe since the spring, when we visited it, so that we found it accidentally in a state which might have been more perfect. Still the mixed system followed as a whole appeared to us to be conformable to the principles of good farming.

A good deal of hoed crops are raised : 10 acres of fodder Indian corn for ensilage, 25 acres of well tilled potatoes, and 6 acres of carrots and beets.

Stock.—We counted in the pasture 32 cows and a bull, 18 heifers and 12 calves of the year. These cattle are of the Canadian and cross

breeds. Several of the calves, however, are pure Ayrshires. A great many hogs are raised and fattened for the use of the house.

The cow and horse stables are under the barn and are spacious, built on a stone foundation, paved in cement, and in communication with a milk chamber, a fodder room, the vegetable cellar and the manure shed. The arrangement of the whole of these, in the same block of buildings and their mode of construction are economical and pretty convenient; they are wanting, perhaps, in height as compared with their horizontal dimensions.

The silo is 20' x 18' x 20' in height, with a cemented bottom.

Book-keeping.—For the farm, a day-book and ledger are kept to perfection, constantly showing the condition of the accounts of the different departments. The figures supplied by the assistant procurator in his entry show that the receipts for 1899 amounted to \$3,442.00 and the expenses or cost of farming to \$2,500, which leaves a profit of \$942 or upwards of 6 per cent on the capital of \$15,000 which is the estimated value of the farm for agricultural purposes.

Among the implements, we noticed at work in the potato field an excellent pulverizer with four jets, mounted on wheels, to apply Paris green with water to the plants attacked by bugs. It can also be used to spray fruit trees and shrubs.

OVIDE VALIQUETTE.

Terrebonne, on the River Mascouche, $4\frac{1}{2}$ miles from the C. P. R. Station.

Decorated with the silver medal.

Competing for the third time (see report of 1890, page 44, and report of the Commissioner of Agriculture for 1895, p. 160.)

Extent of the Farm entered for the competition.—244 acres, of which 110 are under cultivation and the remainder under bush. The plan of this farm is given in the report of 1890.

It would be tedious to go into details of the observations we made on this farm to warrant us in giving it the rank assigned to it in the table of points, but we may sum up by stating that Mr. Valiquette belongs to the class of good farmers and is worthily seconded by his excellent family of sons and daughters.

The farm, composed of a good clay soil, which is a little sandy, however, near the hills, is well kept, well tilled, suitably fenced and drained and provided with good water for the stock. The division is comparatively excellent, but from certain standpoints it is not yet come up to the standard of perfection.

There are a few arpents of stone drains, 4 acres of land well improved with 400 loads of black muck, which has increased the production 25 per cent and only cost \$10 per acre—seemingly a very handsome profit.

The milch stock is not bad, but it might be better, better fed and more profitable. The cows fed on rich pasture of young clover, hay and tender grasses would have given more milk than in a pasture of timothy in the head.

The pigs are fine and of good Yorkshire breed or grade Yorkshire.

The flock of Brahma poultry—the cock being pure bred—is excellent and numerous.

The house, an old one, is nevertheless a good large stone building, offering all the comfort desirable for a large family—water works, excellent water, sink, drain, water closets, &c.

The dairy is clean, well lighted and well equipped, supplied with cold water and four good creaming basins, &c., &c. Mr. Valiquette claims to make more money by manufacturing his butter at home than in carrying his milk to the neighboring creamery two miles distant. We did not uphold the contrary, as that may depend on circumstances and the skill of Madame Valiquette, but we could not get rid of our doubts on the subject. We should be inclined to advise him to use at least one centrifugal hand creamer.

The farm buildings are sufficient, good and comfortable, but the arrangement of the whole, as elsewhere in general, might be more perfect. There is a manure shed and the manure is well kept and well utilized.

The implements are good and sufficient.

The system of tillage, as given, consists in a good rotation of 7 years : vegetables, manured grains. meadow, meadow, pasture, pasture, grain (ground, we think.)

We have much pleasure in referring to a field of strawberries, $\frac{3}{4}$ of an acre in extent, from which Mr. Valiquette had already gathered and sold, on the 14th July, for \$250 worth of fruit and from which he expected to take another \$30 worth. Here, for a little piece of ground, is a return that well may stimulate dainty fingers to pick the delicious berries. And they were more than tempting, Mr. Valiquette's beautiful berries !

Book-keeping.—Consists in a journal of receipts and expenses, a few special accounts of the production and a ledger. Mr. Valiquette brings intelligence to the performance of his work, but his books might be better adapted to their object.

Last year's receipts amounted to.....	\$1,223 41
And the expenses.....	665 77
	<hr/>
Profit.....	\$ 557 64
In his entries, Mr. Valiquette gives the following items for 1899 :	
Pigs sold.....	\$227 49
Butter sold, 2060 lbs	389 53
Animals sold.....	148 00
	<hr/>
Total.....	\$765 02

He does not indicate the balance of \$1223.41 noted by us in his books.

The cropping was sufficiently varied, well executed and in good condition, with the exception of the pastures which were not up to the mark. A larger area of green fodder would have been needed.

The Valiquette family successfully carries on domestic industry.

The whole well examined, weighed and considered resulted in giving Mr. Valiquette an aggregate of 85.50 points, which proves that he has not receded in the path of progress.

BENJAMIN BERTRAND

St. Hermas, County of Two Mountains.

Three miles from the railway station and nine from the wharf at St. Placide.

The total extent of the farm or rather of the farms entered for the competition is 145 acres, of which 113 are arable. From the agricultural point of view, this is one of the finest farms visited by us : soil level, clayey, not heavy and of good texture, free from stones and of great fertility, resting on a good subsoil—land suited to grain, hay and vegetables. It seems to need nothing but good ploughing, harrowing and draining. We saw on it the finest crop of grain after that at Mr. Ogilvie's. The hay, however, though of fine quality, might have been rendered more abundant, taking into account the quality of the soil. Mr. Bertrand raises a good deal of hay for the market. Some of his meadows are, perhaps, a little too old. The pastures were very good and the stock in good condition. But the herd of cows might be more numerous and still better. The sheep, pure Shropshires, are very good. The poultry and swine are also of good quality; the latter, however, are not numerous.

The division of the farm is not perfect, but all the crops are well made. Fields, ditches, implements and buildings are well kept and in perfect order. There is no ground lost.

From an ideal standpoint, imperfection may be found in the system of tillage and the shallowness of the ploughing, but these do not seem to detract materially from the abundance and quality of the crops on the greater part of the farm.

A pretty maple sugary is worked intelligently and economically. Two spouting artesian wells supply water in the pastures. One of these wells, in a permanent pasture shaded by trees to which the stock have

constant access, gives a continuous jet, $\frac{3}{4}$ of an inch in diameter, of cold, limpid water which overflows into a large wooden trough. Water is also supplied to the buildings by another artesian well with the aid of a pump.

The buildings, which are sufficient for the requirements, are good, but of old-fashioned arrangement, being in several blocks, which are however, connected by covered passages and thus rendered handier and more comfortable and economical for attending to the animals. It is unnecessary to go out to convey and distribute the fodder.

Madame Bertrand, who appears to be the incarnation of activity, nevertheless still finds time to devote to domestic industry in spite of all her other work both in and out of the house, whose order and cleanliness do not seem to suffer therefrom.

In fine, Mr. Bertrand is one of the stamp of good farmers who are more meritorious than ambitious, and, all considered, he may be said to have nobly won the 85.25 points awarded to him and which entitle him to the silver medal of very great merit.

HORMISDAS HOTTE, M. C. A.

St-Ezear range, parish of St-Martin, County of Laval.

At $1\frac{1}{2}$ mile from the C. P. R. Station. (85.15 points.)

Mr. Hotte competed and won a bronze medal in 1890 ; (see report of that year, p. 42 and 43, for the plan of his farm and the remarks, which we endorse, on the system of tillage, the divisions of the land, the buildings, &c.)

Area of the Farm under Cultivation.—70 acres. Soil : sandy-clay, slightly varied, apparently holding enough of lime, too cold in the low ground ; sub-soil seemingly too retentive or poorly permeable in spots where the grain had too pale a tinge. Good drainage and deep ploughing, a breaking up, perhaps, of these parts, would appear to us to be the most efficacious physical improvements. Moreover, the land seems to be of good composition and may be considered fertile.

The system of tillage is ordinary mixed or for general production, with a few specialities under circumstances appropriate to the market, such as different vegetables for sale. Mr. Hotte also sells a little hay, but, as a complete or at least partial compensation for the elements of fertility taken from the soil, he buys a little lime and plaster, straw for litter when he can get it—that is to say, on the principle of robbing Peter to pay Paul, and sometimes ground grain. All the rest of the products is consumed on the farm,

The milk is taken to the neighboring cheese factory.

Rotation.—1. Different hoed crops on stubble;

2. Wheat or barley with fodder seeds;

3. Two or three years under meadow followed by two or three years under pasture, which would give a rotation of 6 or 8 years, but we would prefer one of 6 years.

Mr. Hotte carts his manure by degrees and places it in large piles in the field to be manured. The winter's manure is applied to the potatoes and the Indian corn in the spring and that of the latter season and the summer is applied in the fall to the plots intended for market vegetables and to the garden. The spring manuring is done partly in the furrows and partly by spreading on the surface of the soil before the ploughing.

Mr. Hotte makes compost with the refuse of the farm: sweepings, ashes, sods &c. He has made improvements by spreading black muck, several hundreds of loads, over 5 acres of white clay and levelling by removing 1,500 to 2,000 loads of earth. The soil thrown up in ditching is spread over the land. He has straightened the ditches, laid down 12 to 15 linear arpents of drainage in the shape of stone trenches 3 feet deep, a defective system which has not shown much efficacy on account of its want of durability wherever we noticed it. These trenches fill up with mud and become choked after a few years and the water no longer flows through them.

The copious rains which had fallen before our visit and the harm they, had done to several of Mr. Hotte's fields, showed us that the land was suffering somewhere from insufficient drainage.

Mr. Hotte claims to have stoned his land to the extent of 10,000 loads of stone removed from it and utilized for fences, drains, wells, &c. He has a pretty good orchard, a nice plantation of forest trees along the public road and in front of his house, which is a handsome residence set off with a flower-beds and has a distinguished appearance. In fine, Mr. Hotte is a farmer of great merit, a man of progress, proud of his calling and belonging to the élite of his class:

I. O. LEVAC

Pont-Chateau, parish of St-Clet, County of Soulanges.

Mr. Levac owns 150 acres, of which 130 are under cultivation—good sandy, ferruginous loam—level, sufficiently friable, more alluvial and less clayey in the lower parts, but having a compact sub-soil and growing hay and grain. Mr. Levac raises a good deal of these two products. The system and details of tillage are good but present no very remarkable and instructive features. The keynote of the whole is that Mr. Levac is a good farmer and an excellent financier.

The draining of the land did not seem to us to be perfect enough everywhere for level soil of this nature, especially in the event of heavy rains.

Stock.—Four good working horses and one colt; 13 Ayrshire and grade cows, 3 of which and a bull are registered, 5 young beasts and some calves; 16 good thoroughbred Leicester sheep and 19 pigs, 5 of which are pure White Chester, entitle Mr. Levac to 12 good points.

His cows were giving 250 lbs of milk at the time of our visit. The creamery paid him \$427.57 last year for the milk of his 13 cows.

The piggery brought him in \$228.16, Mr. Levac is a remarkable farmer. He has 65 hives advantageously set out in his orchard and garden near a good building specially intended for wintering the bees. See figures 71 and 72.

The receipts from the apiary last year, amounted to \$575, of which \$475 were derived from the sale of honey, and the expenses to \$93.82 for the purchase of hives and other materials, which he has still in hand.

The orchard, which is still young and the garden, in which different vegetables and small fruits are grown, are good and constitute both an embellishment to the property and a source of agreeable and excellent products.

The public road is bordered on each side, along the entire width of the land, with a handsome plantation of maples. See fig. 73.

Mr. Levac's house is of goodly size, well built, divided and painted. handsome, neat and comfortable with kitchen of the same style in the wing, provided with a sink and discharge pipe.

Book-keeping.—Mr. Levac keeps his accounts well. Besides a journal of expenses and receipts in money from all sources, he keeps an inventory book.

The total receipts of 1899-1900 were.....	\$2,114.92
and the ordinary expenses of the farm	297.82
leaving as a balance of receipts.....	1,817.10
deducting the expenses on capital account	529.30
still leaving a surplus of.....	\$1,287.80

The total profit, according to the inventory, would amount to \$1,612, which appears very good.

In spite of all his good qualities and his apparent success, Mr. Levac is still a bachelor. It seems that good farming possesses more attractiveness for him than the charms of the fair sex ; but the silver medal, with which he will be decorated as a striking testimony to his merit, will, perhaps, influence his destiny.

Illustrations of Mr. J. O. Levac's farm buildings.

FIG 63. (Page 224)

Ground plan of the farm buildings and their surroundings—*a*. Dwelling—*b*. Stables and barns—*c*. Piggery and manure shed—*d*. Small pig shed—*e*. Heating apparatus—*f*. Grain shed—*g*. Wood and waggon shed—*h*. Dairy.

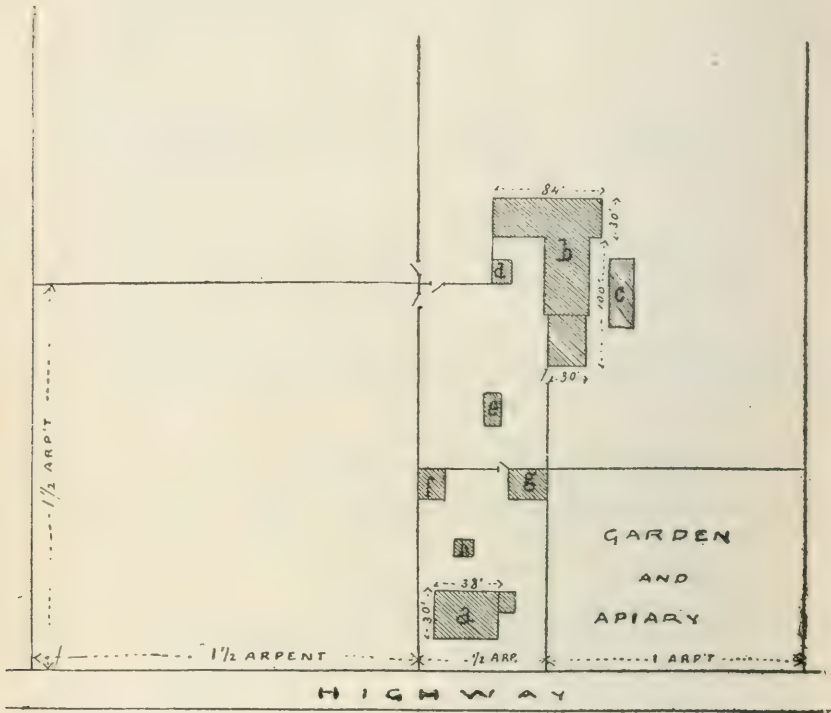


FIG. 63.—Horizontal plan of Mr. J. O. Levac's farm buildings.

FIG 64. Plate 27.

View of the barns and stables—looking south.

FIG. 65. Plate 28.

View of the same taken from the east, showing to the left in the foreground the barn and horse stable and to the right, the manure shed and piggery behind the stable. The Indian corn field can be seen near the buildings.

FIG. 66. Plate 29.

Horizontal plan of the barn, cow stable and horse stable, &c.

I. Small pig-shed.—*a* Passage ;—*bb*. Interior compartments ;—*cc*. Outer yards.



Fig. 65. Levac farm. View of the barns and stables, taken from the East side.



Fig. 68. Levac farm. Interior of the stable.

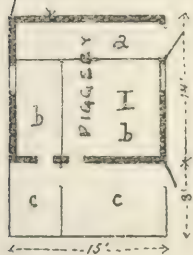
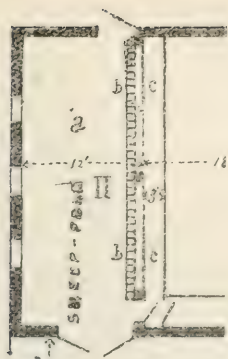




Fig. 66.—Levac farm.—Horizontal plan of the farm buildings

II. Sheep fold : in the form of a shed, at the western gable of the barn.—House for the sheep with a door at each end ;—*b* Rack and manger. The fodder is distributed by the covered passage *c* which is closed on the side of the barn in which it is.

III. Barn.—*aa* Places for the grain ; *bb* Threshing floors.

IV. Poultry-house (Bad exposure).

V. Cow stable.—*aa* Stalls ;—*bb* passages ;—*cc* calf pens ;—*d* artesian well with pump supplying water to the drinking troughs of the horses and cows through a moveable spout. Good drinking water, very economical.

VI. Horse stable.—*aa* Stalls ;—*bb* Passages ;—*c* Cupboard.

VII. Hay barn.

VIII. Piggery.—*aa* Pig-houses ;—*b* Passage.

IX. Manure shed.—Can be connected with the cow and horse stables by means of a covered passage.

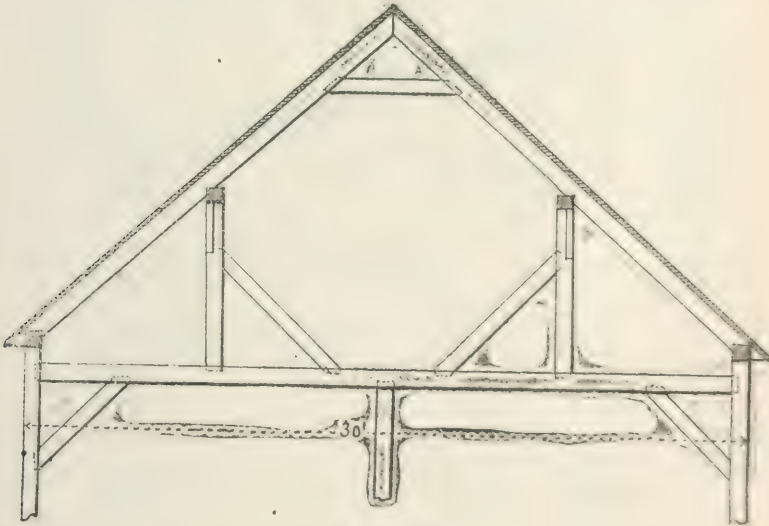
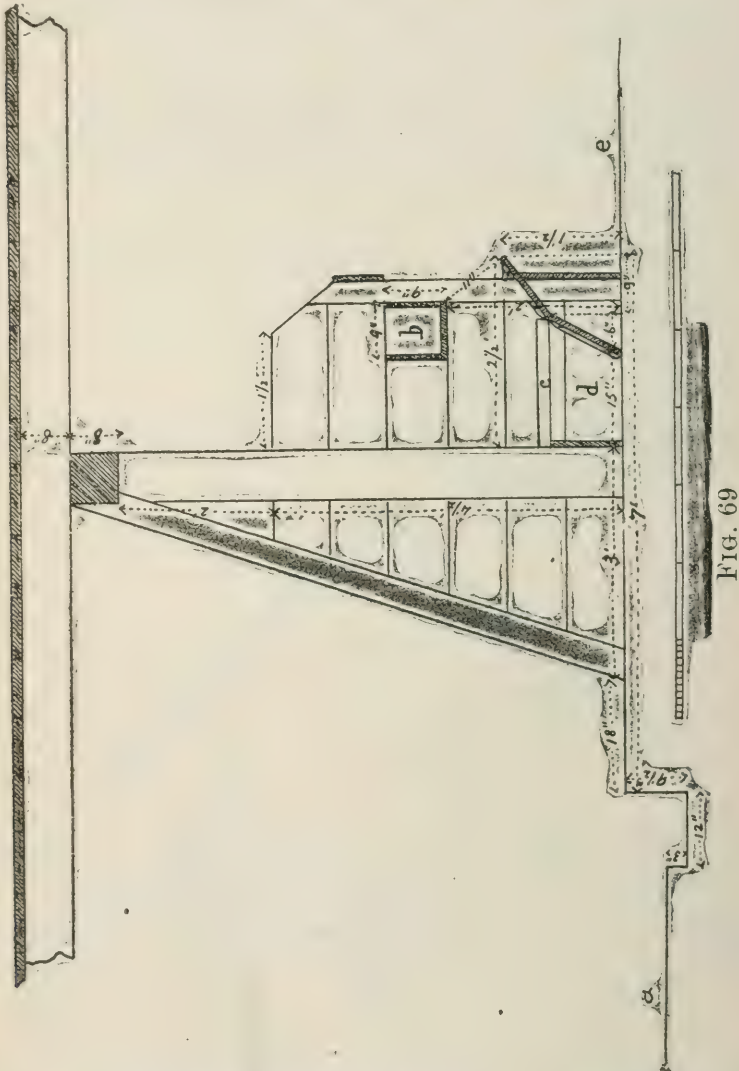


FIG. 67.

Framework of the barn,—Simple, good and economical.

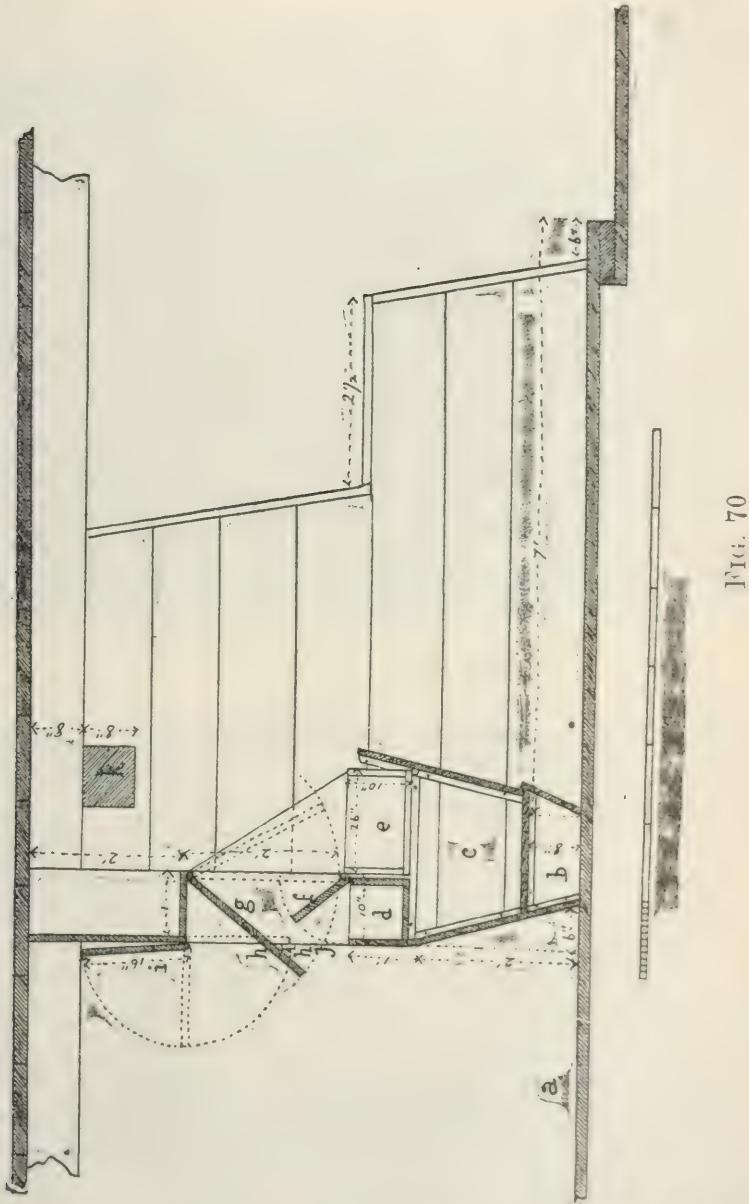
FIG. 68. Plate 28

View of the interior of the cow stable, showing the mode of construction and division of the stalls, the water trough and salt box in the upper part of the manger.



Vertical section of a stall in the cow stable :—*a* Rear passage ;—*b* Water

trough ;— *c* Salt box ;— *d* Manger ;— *e* Centre passage. Plank floor, good.



Vertical section of a stall in the horse stable :— *a* Passage at the horses'

heads ;—*b* Underpart of the manger closed by a board ;—*c* Manger ;—*d* Water-trough ;—*e* Oat box ;—*f* Cover of the trough extending the whole width of the stall, except a space of 10" to 12" on one side to let the horse drink. This cover is kept constantly closed and only opened when it is necessary to clean the trough. The open part is closed against the horse, at need, by a moveable board, *g*, of 10" to 12" in width by two feet in length, hung from the top. A button, *h*, keeps it outside of the trough to let the horse drink ;—*i* Shutter closing the front of the manger to prevent the horses from passing their heads into the alley ;—*j* Empty space to favor airing and lighting ;—*k* Beam of the framework.

Remarks. This horse stable is only a remodelling or transformation of part of the old barn. This is why, notwithstanding its favorable arrangement, it is a little too narrow. The rear part of the divisions (between two) is too low and it would be better for lighting purposes if the upper part of the same were in iron bars of $\frac{1}{2}$ " to $\frac{5}{8}$ ".

FIG. 71. Plate 30

View of the garden, orchard and apiary, containing 65 improved beehives.

FIG. 72. Plate 30

View of part of the orchard and of the wooden building for wintering the bees.

Fig 73. (Page 229)

View of the public road on front of Mr. J. O. Levac's, from west to east, showing the house, through the trees, the fence and the plantations.

FIG. 74. Plate 31.

Sketch showing the method of closing of a board gate at Mr. Levac's, *a*. Moveable board of 4" serving as a bar—*b*. A fixed hardwood pin, traversing the bar and exceeding it on both sides—*c*. Hole intended to receive the pin—*d*. To hold the bar in position and to prevent the animals from opening the gate by moving the bar—*e*. Morticed post receiving the bar. This gate is simple, economical and handy.



Fig. 71. Levac farm. View of the garden, orchard and apiary.



Fig. 72. Levac farm. Part of the orchard and building for wintering bees.



Fig. 73. Levac farm. Tree plantations along the road in front of the Levac property

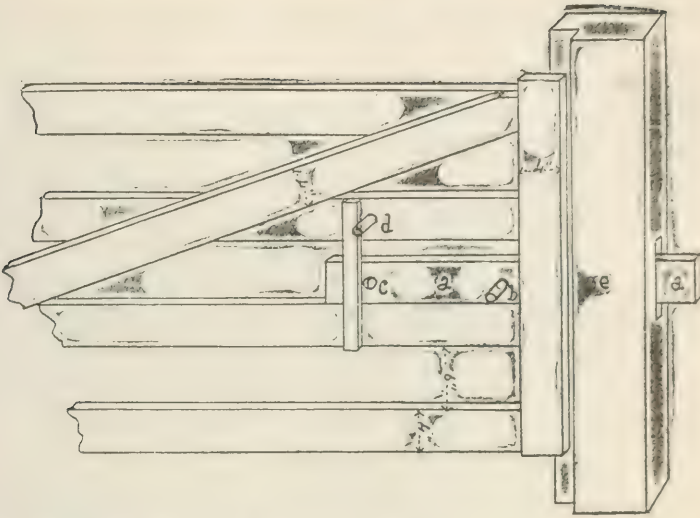


FIG. 73—Levac farm.—Model of a board gate and its mode of closing,

NAPOLÉON HUOT

St-Canut, County of Two Mountains, at 3 miles from the Great Northern Railway Station, and at 6 miles from St-Jérôme (85.05 points) competing for the 1st. time.

Area of land, 100 acres ; arable area, 90 acres ; soil, good clay, friable, of different shades : partly gray, black in the low grounds, with clay sub-soil ; the latter are drained.

System.—Mr. Huot follows a good system of tillage, or we should be more correct in saying, a *relatively good* one as compared with others. The rotation was given as follows :

1. Indian corn, vegetables and peas, on *fallow*.
2. Barley or oats, with fodder seeds.
3. and 4. Meadow.
5. and 6. Pasture. (1).

(1) Note. This rotation does not agree with that given in the entry, which is one of 8 years.

Such a rotation regularly followed would require six divisions of 15 acres each (= 90 acres). The division of hoed or improving crops—at least, physically—should be one of 15 acres, while in this case it is only about $6\frac{1}{2}$ acres : 3 acres of potatoes, 2 acres of Indian corn, $\frac{3}{4}$ acre of carrots ; $\frac{1}{4}$ acre of turnips ; $\frac{1}{2}$ acre of beans and beets. Peas, mixed grain &c., take up the rest of the division. The hoed plants or all other manured crops should not be grown on the same piece or plot at each rotation or every six years, but upon the plot or plots occupied by the grains in the course of the previous cropping. The extent of the meadows and pastures, 30 acres and 30 acres, is in keeping with a six years' rotation. We are of opinion that a piece of green fodder, to feed the cows at the end of the summer, on the division set apart for the hoed crops—which could not be entirely devoted to that purpose owing to want of sufficient manure—would enhance the quality of the system.

Stock.—Canadian and grade, good and pretty numerous. Sheep Shropshires and grades ;—A dozen of pigs, young and old, good ;—poultry not numerous.

Manure.—Well used and suitably kept.

Liming.—Mr. Huot informed us that he had used on alluvial soil 30 barrels of lime, the effect of which, according to him, has been good, but did not seem very apparent to the Commission.

The Thomas phosphate employed by Mr. Huot to the amount of 2 tons appeared to him to be good, but not worth as much as barnyard manure to his land, which may be an indication that it has less need of phosphoric acid than of nitrogen and humus.

Real improvements.—Stoning, stone fences, bridges and stone foundations, road stoning, eleven acres of wooden drains with efficient results, composts of manure and earth thrown out of the ditches, plantation of 15 maples around the house, front road perfectly macadamized, land very well drained, ditches and furrows in perfect condition, good order prevailing everywhere on the farm, these are sufficient to proclaim a man of progress.

Book-keeping.—Mr. Huot's book-keeping is good and sufficient—it

may be said—for a farmer. He keeps an account of the total receipts and expenses of the farm in money and in kind :

The receipts of 1899 were.	\$1,000.00
The expenses “ 	652.00

And the profit \$ 348 00
representing the interest on the working capital, rolling stock included.

Mr. Huot has been farming his land only since 12 years. He paid \$3,000 for it, of which \$1,000 were cash ; the balance of \$2,000 being payable by yearly instalments of \$166.66 $\frac{2}{3}$ without interest. On the 12th August, he had only one payment remaining to make and the money was ready.

It is by working with perseverance and calculation, by practising order and economy and by keeping close track of his operations that he has managed in twelve years to earn two thirds of his property, to make all the real improvements mentioned and others which increase its value and to merit, as the reward of his industry and success, the silver medal of very great agricultural merit, the decoration and indication of the good farmer.

ADOLPHE OUIMET

St-François de Sales, County of Laval.

1 mile from the C. P. R. Station. (53 points).

Farm of 108 acres, of which 91 are under tillage, well worked, well divided, fenced in the usual way, pretty clean, generally speaking, for the year, but capable of being more so ; provided with an old, but good and solid stone house, somewhat low, but clean and well laid out, yet not supplied with the modern accommodations and improvements to be often found nowadays among farmers in easy circumstances ; provided also with old and unimproved but still good farm buildings, capable of housing both crops and stock and equipped with a good and pretty complete set of implements.

The stock, as a whole, are good and well kept both in winter and summer. The water and the watering facilities in the field, however, are not up to the mark.

Manure.—Well employed, but not all perfectly kept.

Farming work : ploughing, harrowing, ditching &c, &c., all well done. State of the crops : good return as a whole.

The soil is a sandy calcareous clay, rather warm than cold, mellow and deep and seemingly very fertile, judging by the crops, for, notwithstanding the abundance of these and the influence which the perfection of Mr. Ouimet's tillage work may have on the production, the system which he practises is not theoretically perfect from the standpoint of the maintenance of the fertility of the soil, inasmuch as he sells grain, hay, vegetables and animals, and consequently robs it of the elements of fertility which the manure derived from his herds is incapable of restoring to it in equal proportions. The result therefore is a deficit in the account relating to the fertility of the soil. This state of things, however, exists in a variable degree among the majority of the other competitors.

Improvements.—The land is well stoned and the stone utilized in fences, which, however, are not well enough made and on $5\frac{1}{2}$ linear arpents of stone trenches of $2\frac{1}{2} \times 2\frac{1}{2}$, the working of which is not efficient everywhere. The stuff thrown up from the ditches is removed in part.

The orchard of about $1\frac{1}{2}$ acre is formed of 5 rows of trees at a distance of 27 feet ; the trees are young and not yet all in bearing, but they look well. The green fodder and vegetables are also grown in the orchard.

The garden is small, but is a model of good keeping and abundant and varied production : fruit trees, small fruits, different vegetables for the use and comfort of the family.

Cow Stables and Dairy.—Mr. Ouimet makes his own butter. His dairy is well equipped with the necessary utensils, implements and apparatus essential to the manufacture of good butter. From the 1st January to the 13th July, he had made 491 lbs. At the latter date, his cows, to the number of 14, including the two year old heifers, were giving 350 lbs of milk per day. This is not extraordinary, but it is superior to many others.

Madame Ouimet and her smart young daughters are rare adepts in domestic industry. We had occasion to admire several garments in dyed wool made in imitation of Persian lamb as well as a number of other

articles, such as blankets, coverlets, &c., for which the prizes carried off at the county exhibitions attest the useful skill of the workwomen.

Mr. Ouimet's buildings and some other small details of less importance are responsible for his loss of the silver medal which he deserved by his talents, his economy as a good farmer and his success. While awaiting a more favorable opportunity, he should be satisfied with leading, in his district competition, the laureates decorated with the bronze medal of great merit.

THE OTHER COMPETITORS

In justice to all, we would like to make an ampler and more detailed report on each, but we should have to repeat nearly the same practices or the same facts already mentioned in connection with the preceding competitors. Such repetitions would be without interest or information for the public. We shall therefore limit ourselves to simply noting the more remarkable particulars in regard to each.

Mr. Alphonse Angrignon, of St. Benoit, county of Two Mountains. The commission especially congratulates him upon his excellent crops, his commodious, well exposed and well lighted poultry house; his very complete and well kept implements; his well employed and well kept manures; the general good order on his farm; his economical operations in the way of stoning, levelling and spreading the earth thrown out of his ditches; the good condition of his ditches and drains; his efficient dressings—finally for all the departments which have entitled him to 3 of the totality of the points offered.

Mr. Angrignon is too rich; that is to say, he has too great an extent of land under cultivation—227½ acres—for the help which he commands. Under such conditions, he cannot take out of his land all the revenue possible. At the same, it is still wonderful that he should be able to cultivate it so well, which proves that he is a good farmer and knows how to conduct his business. Rightfully therefore he is entitled to the medal of great merit, but there is reason to hope that at the next competition, if he perseveres in the path of progress in which he is surely advancing, he will have no trouble in winning the silver medal.

Mr. Walter Smith, of St. Jérusalem d'Argenteuil, is noted for his fine, good farm viewed as a whole; a good system of tillage and an excellent division of his land, which is the best we have yet seen and of which we regret to be unable to give a plan; a good arrangement of his farm buildings on a single block surrounding the yard on three sides and protecting it against the cold winds; a good stable and a good manure shed.

The tillage and the crops were good, but greater order in certain departments and more thorough drainage work would have won more for Mr. Smith, who nevertheless still cuts a good figure in the *great merit* class decorated with the bronze medal. But we trust that, at the next competition, he will easily, if he only wishes to give the matter attention, carry off the silver medal which his predecessor on the farm, the man who improved, divided and built upon it, would have undoubtedly merited.

Mr. Mathias Ménard, of Ste. Marguerite, County of Terrebonne, leads the competitors of his parish. He is noted for his active and intelligent labors, his useful and profitable improvements, consisting chiefly of stoning and stone-fencing, for his system practised with forethought and economy, and for his success, which is so manifest in the conditions of soil and locality, demonstrating his ability or his good luck as others would say.

He owes much of his success to the enlightened devotedness of his worthy wife, who has bravely seconded his efforts. We are tempted to give in two words the history of this brave settler, in the hope that it may hold out an encouraging example to the young settlers in our northern townships.

Seventeen years ago, Mr. Ménard bought his farm of 200 acres for \$500.00 on credit: He was poor, had no stock, except a poor horse and a kind of a cart, for which he also owed. To-day his land is paid for, he has \$500 to \$600 out on loan and his farm, valued at \$700, is worth, according to him, \$1,200, apart from his moveables and his cattle which may be worth \$1,000.

If these facts be correct, as they seemed to us to be, we can state that

they present an enviable result. Mr. Menard is only 42 years old. As will be seen, he has not obtained his medal under false pretences.

The other competitors of Ste. Marguerite are all similarly situated as regards soil, climate, system of tillage, outlets, &c. being 4 to 10 miles from the C. P. R. Station. The soil is everywhere light and fairly good—yellow mountain soil—but very rocky and broken, and generally lacking in depth. On the other hand, all the lots are supplied with the finest water in the world. The grasses and clovers thrive pretty well where the land is cleaned and where the droughts are not too heavy, but especially when the grass receives a dressing of manure. The hay also grows equally well, even very well in spots, in the young meadows formed after a crop of manured potatoes; but it ends by becoming dirty and less nutritive in older meadows sown on new and still arid land. The good ordinary yield of the meadows ranges from 75 to 200 bundles according to the season.

There is a good deal of permanent or natural pastures on the untilled or still unploughed lands; so that the keeping and feeding of stock are easy enough in summer; but the wintering of a large herd must often embarrass some on account of the difficulty of raising abundant and nutritive fodders. Efforts are being made to solve this last problem, but it is still only the few who have barely succeeded and then only with large areas of land. With this view, oats are above all grown for the grain and for fodder. For the latter use, it is cut green; but as a general rule, the mixing of a little peas is neglected for the apparent reason that the seed must be purchased. A small number sow a little of these. This is a very much better practice, which increases the alimentary value of the fodder and of the grain, when the oats are harvested ripe, which allows of the stock being better nourished.

Some grow a little Indian corn; all 1 to 3 acres of potatoes; several a piece of turnips commonly on newly cleared land. A few have orchards or rather are making a beginning in that direction, which is hopeful of success; but not to compete with the fruit-growers of the Montreal district.

Each farmer in St. Marguerite makes his own butter; there is no creamery. The rough, stony, hilly roads are, it is said, a serious impediment.

ment to the carriage of milk for any great distance. In that case, small cooperative creameries, located in the best spots, would, perhaps, be an improvement and these little creameries, each formed by a few farmers in partnership, might become syndicated in order to sell their butter more readily and advantageously. We were informed by most of the competitors that in the beginning of April last they sold their butter at 17 cts. when it was worth $19\frac{1}{2}$ to 20 cents. However, nearly all of them have ice-houses and cool dairies equipped with creamers in iced or cold spring water. The St. Marguerite butter therefore enjoys an excellent reputation.

The herds of cows are fair, being in part Canadian grades, some of them having a Jersey strain. They are butter-making cows.

A good deal of stoning work is done, because cultivation would be hardly possible without it, but the numerous stones are piled in scattered and irregular heaps over the whole surface of the fields instead of being conveyed at once with one handling to the foot of the slopes there to be formed at the bottom of the little valleys into dykes of a size proportioned to the quantity of materials with, underneath, on a stone bottom, a good continuous drain. This proceeding, apart from the fact that it would provide drainage for the soil, would facilitate the transportation of the stones, as it would be always from above to below. The earth which heavy rains sometimes wash down from the higher to the lower grounds collects along the dykes so built across the slopes, which increases the depth and the fertility of the soil in such spots and opens the door to intensive cultivation. Then, as fresh stones are brought to light above, they are transferred to the top of the dyke wall, and thus, in the course of time, a certain levelling is brought about and the cleaning is less expensive, more thorough and permanent.

It is time that the farmers of St. Marguerite should set to work, for these numerous piles of stones not only occasion loss of land and time in cultivation, but are moreover a source of dirt, as they are generally surrounded and covered with briars, brambles and raspberry bushes. If the latter were the only inconvenience they might be turned to account by the collection and sale of the fruit, the proceeds helping, perhaps, to pay for the removal and transportation of the stones and, in the place of the

raspberries, excellent fodders might be afterwards grown, which, converted into butter and meat, would constitute a surer element of wealth.

An excellent practice for the soils of the region under consideration would be to apply the manure as a dressing to the meadows the second, sometimes the first year, after the hay has been cut off or at the end of the summer and then to pasture the ground for a year or two. This proceeding, coupled with the spreading of the wood ashes arising from the land, cleaning of the stoves, etc., would enormously increase the quantity and quality of the grass and especially of the clovers. We had occasion to admire its results at Mr. Jos. Maillé's, a farmer who practises this method successfully and who received our warm congratulations. Mr. Maillé's meadows and pastures showed better grass than anywhere else. Let us add that he has not spare seed.

After grass fertilized as mentioned and enriched with organic matter, potatoes and Indian corn give a better yield. The following rotation may be followed :

1. Potatoes and Indian corn and even green fodder on pasture.
2. Oats and little peas with plenty of fodder seed.
3. Meadow, manured after haying.
4. Meadow, dressed with ashes at the end of the summer.
5. Pasture.
6. Pasture, if necessary, that is to say, if there be not enough natural pasture on an unbroken ground. The pasture is ploughed in the fall and grubbed the next spring for vegetables.

We believe that if this system were regularly followed on all the arable lands by all the farmers of St. Marguerite, it would create a small economic revolution in the region.

But to bring it on more surely, they must begin by improving the production and care of manures, which are not all that could be desired everywhere. This is the condition *sine quâ non* of success, because the soil of St. Marguerite needs manure to grow heavy crops just as its owners require bread in order to live and work.

We will conclude with some brief details relative to the competitors.

In addition to what we have already said about Mr. Maillé, we owe

him a compliment upon the division of his land and his farm road, upon $1\frac{1}{2}$ acre of buckwheat and barley, 17 acres of oats, 1 acre of potatoes, a small field of cucumbers and pumpkins, which won for him the maximum of points, and also upon $1\frac{1}{2}$ acre of turnips and 30 acres of pasture, which as a whole brought him 90 o/o of the points offered. Mr. Maillé had 6 acres of a mixture of peas and oats: he owns a small orchard. His crops yielded him 28.70 points, which is very good.

At Mr. Lambert Beauchamp's we found a good new, comfortable house, with an excellent dairy and good farm buildings in perfect condition, economical, well divided and handy notwithstanding the simplicity of their construction. The cow and horse stables are on a good stone foundation and the manure is under shelter.

The stock of all kinds is pretty good and pretty numerous: 11 cows, 1 bull, 4 heifers, 2 calves, 18 sheep, 7 pigs, 17 hens, 25 chickens and 2 horses. The pastures are good, considering the land. There are a few healthy apple trees, but they are not treated properly. A field of 11 acres of oats received the maximum of points. Mr. Beauchamp raises a little beans. We advised the cultivation of early and hardy varieties of the same for domestic consumption (*Pork-beans*.)

Mr. Peter Scheffer merited all the points for 20 acres of oats, $\frac{1}{2}$ acre of buckwheat, 2 acres of barley, and 2 of potatoes. He had spread 300 bushels of ashes upon 8 acres of oats, which were very fine (it would have been better, however, to have spread them upon the meadow which would have returned more hay and just as fine oats afterwards.) We remarked a small field of flax, which was pretty good. All the settlers should do the same and even more; the calves as well as the people of the house, would benefit therefrom.

Mr. Ovide Charette has 22 cows, of which 20 were giving 500 lbs of milk in June. All his stock is pretty good, but there seems to be a want of selection in the raising. The garden is well fenced and filled with vegetables. This farm had already competed, when Mr. Leon Charette, father of Mr. Ovide, worked it. His son, who is still young, has not had time yet to make much new progress. The extent of the farm imposes more labor upon him than he can perform with all the perfection possible. His farm, however, is one of the most prosperous in Ste. Marguerite. We trust that Mr. Charette will continue to walk in the footsteps of his father

and that he will uphold the reputation of the farm which he created and worked so successfully. (1)

At Mr. Jos. Brisebois', some very clean crops were found, together with 700 plants of tobacco, which promised to come to maturity, a small field of Indian corn and a well kept garden, well stocked with fine well advanced vegetables of all kinds : tomatoes, cucumbers, melons, onions, cabbages, carrots, etc., etc., which showed that Madame Brisebois is a skillful gardener. She makes hot beds. She also understands domestic industry and utilizes to advantage the wool of her sheep.

Mr. John Pearce had 7 acres of oats and $2\frac{1}{2}$ acres of mixed grain, meriting 100 % of the points and a large extent of meadow rated at 60 %. A piece of 5 acres on the best plateau obtained 80 %. This plateau of land on a height is well stoned and presents an agreeable aspect. The soil is pretty deep and well adapted to intensive cropping. There is an orchard containing plum trees, wild cherries and a few vigorous peach apple trees, which do not appear to suffer in any way from the climate. But this orchard claims the help of arboriculture. Mr. Pearce has 2 good horses, 1 colt, 10 cows, 4 heifers, 1 calf, 20 young and old sheep, the whole fair (65 %) ; his system of tillage resembles the others.

He arrived from Michigan with a little money and took up his lot six years ago, paid \$1,200 for it, of which \$500 were cash, the balance at the rate of \$100 a year without interest. When he began to farm, he had \$150 remaining. He states that he realized \$420 in money last year from his crops. We believe in his success.

Mr. Emery Laforest was in no way prepared to compete.

Before bidding adieu to the worthy competitors in St. Marguerite, we cannot help again giving them this advice : " Increase and keep your " manures well on meadows and potatoes ; look to the quality of your " cows ; carefully keep and husband your ashes like gold ; they are the " food *par excellence* for hay and grass and above all, clover, beans, peas and " potatoes ; after these crops, you can get bread from a piece of wheat land.

(1) Mr. Raoul Charette also succeeds his father, who lives with him and who has already competed for the *Agricultural Merit*. As he is engaged in working at another source of revenue besides his farm, its cultivation suffers somewhat. He has, however, a pretty good herd : 15 cows, 11 young cattle, 1 bull, 28 Leicester sheep and 8 pigs ; but he gives up the greater part of his farm to pasture.

“ Thus, more fodder of better quality, more vegetables, especially potatoes for fattening your pigs and cattle! in a word, a better and more agreeable life, with less aversion for the rocks and hills, more love for the home, the parish and the mountains !

“ But to crown this work with success, you must profit by the circumstance which puts building timber within the reach of all to improve your dwellings and the lodgings of your animals, to adapt them more thoroughly to the needs of the day, and further you should plant maple and fruit trees to ornament their surroundings, to render them more attractive and enhance their value.”

To attend at once to the whole group of the St. Marguerite competitors, we have been obliged to pass over Mr. Orphyr Lalonde, of Rigaud, whose *merit* is sufficiently important that we should return to mention it.

Mr. Lalonde owns a fine, large farm, nearly all of clay land, upon which his crops grow pretty well notwithstanding the apparent poverty of the soil in organic matter and nitrogen. His system of tillage is not theoretically the best from the standpoint of the fertility and improvement of the soil, but it seems to give him satisfaction. He sells all he can and makes all the money possible.

The crop was good and several fields were No. 1 ; but his cattle are not numerous or good enough for his land.

An orchard of 55 apple-trees and a garden, containing some apple-trees, 20 to 25 gooseberry and currant bushes loaded with fine fruit, and different vegetables, were pretty good.

Mr. Lalonde has recently built for himself a good, well finished and very comfortable house.

He is still a young man, with the love of work, the talent for economy and the desire to progress. With these qualities and dispositions, we have no doubt that we will succeed in raising himself to a higher rung in the ladder of Agricultural Merit.

In taking leave of all the competitors, we are happy to tender them our sincere thanks for the politeness and deference with which they received us and our frank remarks.

We conclude, if not with the certainty of having given satisfaction to all, at least with the consolation of having conscientiously done our duty towards each of them.

Suggestion and conclusion.—Before closing this report, we take the liberty of reiterating the suggestion and the hope expressed by us in relation to Mr. Nesbitt, p. 199, namely, that the law or the regulations relative to the agricultural merit competitions should be amended so that the proprietors of farms, who are not professional farmers living by their agricultural labor and upon the revenues from their land, may form a special class of competitors entitled to the gold medal, without depriving the competitors of the agricultural class properly so called of the same reward when they deserve it. Thus, in the present competition, Mr. W. W. Ogilvie, a wealthy amateur farmer, having been already admitted to compete and having already won the silver medal, deems himself rightfully entitled to receive the gold medal, as being the competitor obtaining the highest number of points; but Mr. John Nesbitt, a professional farmer, at the head of the competitors of his class has also gained enough points to deserve the same reward of his *exceptional merit* and we venture to recommend that it be granted to him, thoroughly convinced as we are that, in so doing, we only voice the general desire of the farmers of the country.

With respect to the competitors upon whom we have dilated at greater length in this report and the farmers who will have the curiosity to read the details we have given and the observations we have made, we anticipate that some of them will not be amazed at the practices and the successes which we have reported and that they pride themselves upon being just as good, perhaps even better, farmers, than most of the actual competitors. Well, then, we shall take the liberty of saying to these worthy gentlemen: "Enter the list at the next competition for your respective regions, assert your merit and distinguish yourselves at the head of your colleagues in agriculture who are interested in know-

“ing and imitating you. We are satisfied that therefrom would result a keen and noble emulation, which would impart a fresh impetus to the progress of our agriculture.”

THOMAS DRYSDALE,
JOSEPH DELAND,
ARSÈNE DENIS,

Judges of Agricultural Merit.

17th November, 1900.

AGRICULTURAL LECTURES

TO THE HONORABLE THE COMMISSIONER
OF AGRICULTURE,
Quebec.

Sir,

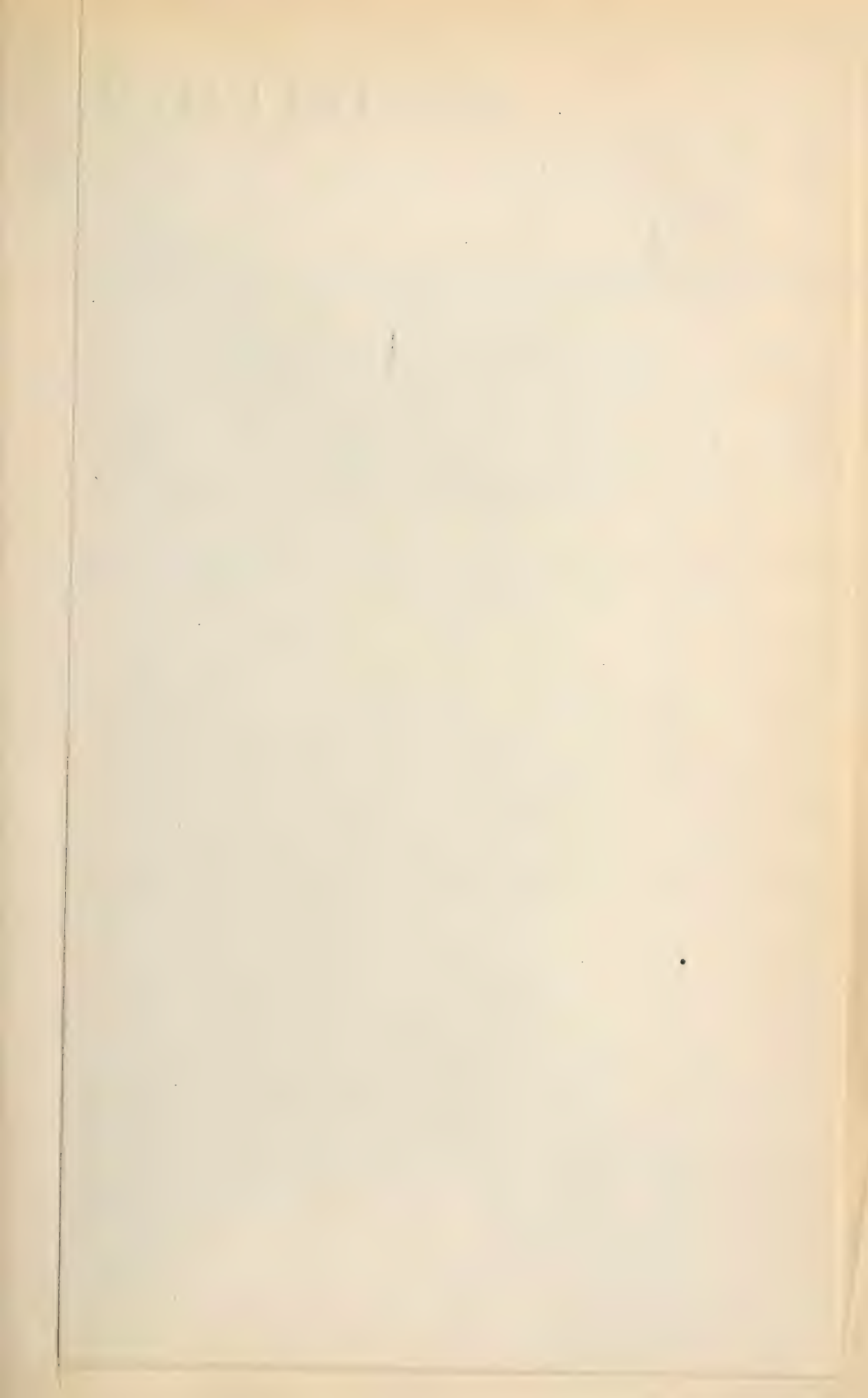
I have the honor to submit the report of my observations relative to the agricultural lectures for the year 1900.

The cordial welcome extended everywhere to the lecturers proves beyond question that agricultural instruction is becoming more and more appreciated.

In the present condition of our agriculture, the farmers have a common interest; which is the reason why progressive, intelligent and thoughtful minds are anxious for the general spread of agricultural information.

And as, in general, the agricultural class have little education and moreover but little time to devote to theoretical study, it follows that after all, lectures regularly attended are the most powerful means to propagate the ideas suited to the circumstances of the time, to the markets, the trade &c. &c.

The lectures are also calculated to beget a love for the reading of agricultural reviews and publications and to facilitate their comprehension and we have been frequently asked for the explanation of a good many technical expressions, which can be easily given in a lecture.



COMPETITION OF AGRICULTURAL MERIT, 1900
DETAIL OF POINTS AWARDED

Moreover, numbers of the agricultural clubs have fallen into the excellent habit of preparing in advance an entire series of questions to which the lecturer has only to reply in order to perform his task.

I would humbly submit that the "Journal of Agriculture" should invite all the agricultural clubs to follow this example.

The chief advantage that would result therefrom would be that the present lecturer would not be exposed to simply repeat the statements of his predecessor.

And the lecturers would study more, which is never a disadvantage.

If this series of questions were forwarded beforehand by the club applying for a lecturer, it would be better again for it sometimes happens that the number of questions being considerable, a little preparation would materially promote the conciseness, accuracy and lucidity of the subject or subjects.

By coordinating his answers, the lecturer would also avoid many repetitions and render his discourse all the more acceptable.

PRIMARY SCHOOLS

We greatly rejoice at the fact that the school teachers in our rural districts are to get the benefit every year of agricultural lectures which will very materially assist them in teaching agriculture.

The teaching class can do incalculable good if only by preparing the children to study the subject alone late on.

And there is no doubt that parents will insist upon assiduous attendance at school when they see that the education as a whole given to their children is from the standpoint of the calling which most of them will afterwards follow.

The school inspectors unite in stating that lectures of this kind are calculated to produce the happiest effects.

We have several times had occasion ourselves to give agricultural lectures in some of our educational institutions and teachers and pupils were deeply interested in such familiar chats.

SUBJECTS TREATED

The long list or rather the multiplicity of the subjects treated would lead me into a host of observations, the enumeration of which may be well dispersed with here.

Moreover, the same subjects should be treated differently according to the circumstances of time, climate, quality of the soil, markets, distances from markets, already acquired habits &c., &c.

The essential point is that the lecture should have a local color, that is to say, that it should be in all respects suited to the locality.

The lecturer must well understand the advancement of agriculture in the place where he happens to be and must be content to aim towards perfection without always seeking to insist upon it, because it is notorious that those who are never satisfied end by getting nothing at all.

PROGRESS REALIZED

Numbers of farmers have been pleased to acknowledge their thankfulness, by loudly proclaiming that they are indebted for a large share of their success to the organization of the clubs and the lectures.

It is easy to note great progress and important changes :

In the general system of farming ;

In the rotation systems ;

In the draining of the soil, etc ;

In the care given to the manures ;

In the ploughing and ploughing matches, etc ;

In the employment of improved implements ;

In the cleaning of the land ;

In the general order on the farms ;

TILLAGE.

In the growing of wheat, vegetables, and leguminous plants, especially the clovers, &c ;

In the cultivation of green fodders ;

In the preparation of the pastures and the division of the farms ;

STOCK.

In the choice of the cattle in general ;

In the care bestowed upon the cattle in winter and summer ;

In the cleanliness of the stables, &c ;

In the health of the cattle ;

In the number of accidents to the stock ;

In the quantity of the stock, &c ;

BUILDINGS.

In the construction and fitting out of the buildings ;

In the maintenance and the cleanliness of the buildings and their surroundings ;

In the economy of construction, &c

DAIRY INDUSTRY.

In the dairy industry generally ;

In the cleanly and proper keeping of the milk ;

In the organization of associations and syndicates ;

In the transportation of the milk ;

In the overseeing of the factories, &c., &c ;

In the knowledge of the duty incumbent upon each, &c ;

HAY RAISING

In the choice of pigs and knowledge of the different markets ;

In the feeding and care of the pigs ;

In union for the sale of pigs and other products ;

POULTRY

In the more judicious breeding of poultry and the general care to be given them.

ORCHARDS

In the planting of orchards.

In the treatment to be given to the trees and fruit &c.

In the treatment of orchard land.

PLANTATIONS OF FOREST TREES

In the embellishment of homes by the regular planting of useful trees.

Plantations along public and private roads.

ROADS

In road improvement generally; there would be greater progress, however, if the municipalities undertook the complete control of all the roads in winter and in summer.

The foregoing enumeration only embraces a part of the things in which marked progress has been made and which have formed the subjects of as many lectures.

Agricultural book-keeping has also made real progress, but there is a lack of uniformity.

CONCLUSION

The lectures have therefore contributed their share to the general progress.

And it is very pleasant for us to be able to inform the Hon. Commissioner of Agriculture that most of the agricultural lectures are brought to a close with a vote of thanks for his kindness towards the farmers.

The attendance at the lectures is, generally speaking, very numerous and we are not afraid to assert that the farmers are more than ever appreciative of all the attention and solicitude which the government is lavishing upon them.

There is a feeling that our entire population have determined to make the Province of Quebec the finest in the Dominion by the union of its farmers, the development of practical education and the improvement of its work.

The whole humbly submitted,

PROF. O. E. DALAIRE.

TO THE HON. F. G. M. DÉCHÈNE,

Commissioner of Agriculture,

Quebec.

Sir,

I have the honor to submit a report of my operations and observations during the fiscal year just expired.

I gave 124 agricultural lectures in the presence of 18,352 persons, whose numbers are certified by the chairman and secretary of each meeting and copies of these certificates have been sent in to the Department of Agriculture after each series of lectures.

The following are the places where I gave these lectures :

COUNTIES.	LECTURES.	ATTENDANCE.
Temiscouata.....	18	2276
Champlain	13	1971
Montmorency	11	995
St. Maurice.....	9	1535
Montcalm (St. Donat).....	1	100
Terrebonne (St. Luce).....	1	509
Wolfe	11	1695
Megantic	6	975
Terrebonne (Dairy Association)	1	600
Yamaska	11	1535
Drummond	3	330
Napierville.....	5	875
Argenteuil	2	250
Rouville	9	1025
Maskinongé	7	1085
Three Rivers.....	1	60
Québec.....	4	800
Ottawa.....	11	1745
Total lectures.....	124	Total attendance.. 18,352

I have only to congratulate the numerous audiences upon their fine demeanor at and their zeal in attending the lectures. However, I have a slight fault to reproach them with—they do not question the lecturer enough.

In the localities where the lecturer is freely questioned, I noticed that agriculture was more advanced there.

I owe special thanks and congratulations to the parish priests for their zealous action in announcing my lectures. I admire their patriotism and the interest they take in their parishioners, while I certainly do not feel like granting a diploma for patriotism to a parish priest, who does not take the trouble to announce an agricultural lecture on the pretext that such lectures are superfluous.

I have met but one such case and his bishop made him a chaplain. He could not be better placed.

I have applied myself to developing the following points :

1. Wheat growing ;
2. The care and cleanliness of milk ;
3. The selection of milch cows ;
4. Hygiene in the stables ;
5. The care of manures ;
6. Improvement of the pastures and meadows ;
7. Stock feeding in winter ;
8. Better roads ;
9. The working of farmer's clubs ;
10. Farm book-keeping ;
11. The cultivation of orchards ;
12. The judicious and economical employment of chemical fertilizers, &c., &c.

PROGRESS ACHIEVED.

Thanks : 1. *To the dairy cow competitions* ; 2. *To the dairy product competitions* ; 3. *To the inspection of the milk and factories by the inspectors salaried by the syndicates or by the government* ; 4. *To the Journal d'Agriculture* and lastly to the *agricultural lectures*, I remarked in the above named counties a very marked improvement :

1. In the care given to the milk ;
2. In the method of feeding the cows in winter and summer ;

3. In the selection from the herds ;
 4. In the care taken of the manure ;
 5. In the keeping of the stables ;
 6. In the production of bacon ;
 7. In the cultivation of wheat ;
- I noted a marked improvement ;
1. In the improvement of pastures and meadows ;
 2. In the cultivation of orchards ;
 3. In the improvement of roads ;
 4. In the working of farmers' clubs .

No progress has been made in the keeping of farm accounts.

This is a misfortune, for the farmer, who does not know what pays and what does not pay, goes at random like the mariner who goes to sea without compass.

It is for our schools to familiarize the present rising generation with agricultural book-keeping. But I doubt very much whether that will ever happen.

I was for 21 years secretary of the school commissioners of St. Adèle ; I attended examinations and awarded special prizes to the more advanced pupils in agriculture and agricultural book-keeping.

Result : None.—Why ? Because it may be almost said that it is repugnant to school-mistresses to speak to their pupils on these subjects.

PROGRESS TO BE MADE

But if I particularize the points in which there has been extraordinary improvement it does not mean to say that we have attained to perfection. No, far from it, there still remains much to be done. But the impetus has been given and rapid progress is being made towards perfection.

Before giving a lecture in any place, I study the weak points of the locality in order to afterwards develop them according to the requirements.

In addition to the subjects above cited, which I propose to again treat in the future, there are two which I desire to more specially handle :

1. *The cultivation of orchards.*—In this connection, it may be stated that a pretty considerable number of apple trees have been bought and planted.

but I regret to have remarked that their cultivation is not well enough understood and that the failures have had the effect of discouraging many farmers inspired with good intentions.

The *Experimental Fruit Stations* are destined to render immeasurable services and I hardly can go too far in encouraging you to continue and multiply them.

2. *Better Roads*.—In united parishes, free from local, municipal, school, religious or other quarrels, the road machines have rendered valuable services.

In some divided parishes, where it has been impossible to agree relatively to the working of the machine, the cause of the failure has been saddled on the reversible plough, when it should be placed at the door of the envious, the jealous and the quarrelers.

I have seen enough to state that the road machine is necessary, indispensable and the most economical means to make good roads.

In a lecture published in the 18th report of the Dairy Association (1899) I gave striking examples of the good done by the road machines and I made suggestions, which I believe to be wise, regarding the means to be employed to spread these instruments a little everywhere without burthening the people or the Government, but simply by suspending during four or five years the annual county exhibitions and employing the money spent on these shows in the purchase of reversible ploughs.

WHEAT GROWING

In each of the 124 parishes which I visited, I took notes on the cultivation of wheat. I was astonished at the quantity of wheat harvested. Within three years, this crop has increased 300 %.

In the county of Témiscouata alone, there were raised in 1898, 60,000 bushels of wheat. I published the fact in the *Journal of Agriculture*.

These statistics attracted the attention of an intelligent inhabitant of Trois-Pistoles, Mr. Cyrille Leblond, and, without hesitation, he erected a roller flour mill during the summer of 1899.

This is what he wrote me on the 14th February, 1900 :

" My dear Sir,

" I should have replied sooner to your questions, but I have been so busy since my mill is in operation that I had not the time.

" 1. The mill is 70 x 50 feet.

" 2. Height 5 storeys.

" 3. I can grind 25 to 30 bushels per hour.

" 4. I purchased the machinery from Goldie & McCulloch, of Galt Ontario.

" 5. The building and the dam cost..... \$3,500.00

" 6. The machinery cost..... 4,000 00

" 7. The installation of the machinery..... 1,500.00

Or a total of..... \$9,000.00

" 8. I can grind all kinds of grain and already I think that I have ground them all.

" 9. The specialities which give it value are: firstly, that the other mills at Trois Pistoles are all built on brooks and have to stop work during six months of the year; secondly, their finest flour is like the pollard which I make at present.

" 10. My mill has been running since the 15th January and, notwithstanding the bad state of the roads, I have had wheat and other grain brought here from St. Eloi, Green Island, St. Clement, St. Paul, St. Jean, St. Françoise, St. Simon, St. Cyprien, &c. I have been constantly at work (sometimes both day and night).

" 11. The flour which I turn out has been compared with the finest flour that comes here and that bears the brand " Lake of the Woods " and there was no difference found between them.

" 12. You ask if I would advise other parishes to erect similar mills. Certainly, Sir. Not only would I encourage to build, but I would build again myself if I had the means, for since my mill has been in operation, I have received letters from people in Kamouraska enquiring when I

could grind such or such quantities of grain for them and if it would be more advantageous to send it by rail or by cart.

“ 13. I can clean all kinds of grain without any difference.

“ Yours, etc.,

“ CYRISSE LEBLOND.”

It is to be hoped that each county will have before long a mill like Mr. Leblond's, which would certainly be one of the best means of encouraging wheat-growing in our province and between this and ten years, we would raise enough wheat to save us the trouble of even buying a pound of flour abroad and enable us to retain at home a sum of six or seven millions of dollars annually.

There are hardly more than four or five of these mills in our province while New Brunswick, a much smaller province than ours, has twenty of them.

The production of wheat in the county of Madawaska, N. B. amounted in 1897 to 4,000 bushels, in 1898, to 8,000, in 1899 to 16,000 and for 1900 a harvest of 35,000 bushels is looked for.

It was the establishment of a roller flour mill at Edmundston in 1898 that encouraged wheat growing to this extent.

Several residents of St. Zéphirin, county of Yamaska, have formed a syndicate for the purpose of erecting one of these roller mills. Why should not the same thing be done in all the counties? At least for wheat flour mills if it is desired to avoid hurting the other mills.

And a roller flour mill for wheat only, costs less than Mr. Leblond's.

Mr. Henri Dugas, of Caraquette, N. B. has put up one of these excellent mills for the sum of \$3,600. The building, which is of three storeys, cost \$1,500 and the machinery and installation only \$2,100.

This mill makes 25 to 30 barrels of flour per day.

The smallest of these mills must have 3 storeys. But a building of two storeys with a good basement suits very well. Larger capacity mills require 4 storeys and upwards according to the capacity demanded.

I think it desirable to give these details, because I know that the people want these mills and that when the day comes when there will be one of these mills in each county, each farmer will raise the bread for his family on his own land.

If I am enabled to give you some important details as regards the construction of these mills and the cultivation of wheat I am indebted to your courtesy in letting me give a series of agricultural lectures among the Acadians of New Brunswick (at the expense of that province, of course) at the request of Hon. Chs. H. Labillois, then Commissioner of Agriculture.

I avail myself of this occasion to thank you on behalf of the Acadians for your kindness towards them.

COLONIZATION.

It is also my duty to thank you, Sir, for the leave of absence allowed me, which enabled me to visit Manitoba and the North-West.

I was well pleased to visit that region in order to assure myself personally of the condition of my fellow countrymen and the quality of the land there.

I returned enthusiastically impressed with the country, but not so far as to tell my countrymen: "Auction out, sell your farms, your stock and all you have and go west."

No, I do not wish to weaken our fine province of Quebec which offers so many resources to the intelligent worker.

But those, who have been raised on the fertile lands of the St. Lawrence, the Richelieu &c., and who have no experience of land-clearing; to those who have not the strength nor the courage to grapple with 100 acres of bush; lastly, those who are unwilling to settle in the region

north of Montreal or in the Lake St John or Metapedia valleys and who may be tempted to expatriate themselves to the United States in order to ruin their health in the atmosphere of the factories, I would strongly urge to go and settle in the north-west where farming is so easy and so productive.

I have in my possession letters from good Canadian Missionaries, who are prepared to receive our people with open arms.

There, a homestead of 160 acres of fine land can be pre-empted for the small sum of \$10.

I have met there upwards of 50 farmers, who came from the United States ten years ago without capital, and who are worth to-day, ten, fifteen, and even twenty thousand dollars.

Reliable information on the subject can be had on application to Mr. H. E. Poulin, colonization agent, Windsor Station, Montreal

On the other hand, I cannot too strongly encourage my compatriots to visit the Lièvre, Lake St. John, Metapedia, &c, for all over these places there are many settlers who located there a few years ago without capital and who to-day enjoy an honest independence.

Pulp wood has become a fine source of revenue for our settlers.

GOOD EFFECTS OF THE LECTURES

It affords me immense pleasure to hear my fellow countrymen of Manitoba congratulating the province of Quebec on its progress in agriculture.

" Really ", said to me a group of Manitoba farmers who visited our province last year, " we no longer recognize Quebec, so great have been the changes since we left it ten years ago. What surprised us most has the improvement in the herds, in the large revenues now derived from the cows, as well as from the pigs, poultry, &c. We admired also the way in which the stables were kept, the land was tilled, everything, in a word. "

His Grace Archbishop Langevin, in a sermon on St. Jean Baptiste day, said :

" May we also have the fine institutions of the province of Quebec, its agricultural societies, farmers' clubs, competitions, its *Journal of Agriculture*, its agricultural lectures, &c., &c."

When I went to St. Pierre de Broughton in 1898, the *curé* Rev. Mr. Pelletier gave me a good reception, but all the same seemed to doubt a little the effect produced by agricultural lectures.

He does not show this opinion to-day, judging from a fragment of one of his letters recently received and saying :

" When you came here two years ago, it did not seem to me to take : however, what you said in regard to wheat *saves \$5,000 to the parish to day*".

" On another subject treated by you, I have no doubt that you will have as fine a success.

" F. L. PELLETIER, Priest. "

SUCCESS AT THE PARIS EXHIBITION

I am glad to inform you that the exhibitors from this province are satisfied with the successes won by them in Paris. Some of the farmers of St. Adèle carried off high prizes and diplomas for barley, timothy, buckwheat and oats. Here are the names of the lucky competitors : Messrs. Ovide Beaulieu, Moïse Beauchamp, Pierre Coursal, Moïse St. Germain, Alfred Gagnon, J. B. Latuille and your humble servant.

THE AGRICULTURAL SOCIETIES AND ANNUAL EXHIBITIONS

In a certain newspaper, I have been represented as a violent enemy of annual exhibitions. I protest indignantly against this accusation, because the agricultural societies have rendered too many services to this province for any one to demand their abolition.

Around should not be confounded with *surrounding*.

When I ask for the suspension of the agricultural exhibitions for a term of five years in order to allow of the purchase of reversible ploughs and breeding animals, I do not ask for the abolition of these exhibitions *ad vitam æternam*.

I simply voice here the opinions of thousands of farmers who regard as altogether useless the annual exhibitions in certain counties, owing to the fact that the number of exhibitors is too restricted and that the amount of the grant is absorbed by a small number always composed of the same persons.

It is time to attend to the improvement of our roads and our herds.

I visited on the spot registered herds, which were pitiable to look at. I think that there are abuses in the registration and that it is done too easily. Certainly new foreign sires are needed to infuse new blood into certain so-called improved herds, which have degenerated owing to excessive in-breeding.

In view of all these considerations, I am led to believe that if certain agricultural societies were to suspend their annual exhibitions during five years, in order to adopt as the programme of their operations : 1. The purchase of reversible ploughs. 2. The purchase of first class foreign sires belonging to the already existing breeds ; we should have the satisfaction of having : 1. Good roads ; 2. Good herds.

During this period of time, there should be at least one competition in standing crops and best kept farms in view of all the good derived from these matches.

I am not prepared, sir, to ask you to impose this innovation upon the province, but to permit it on the part of any society asking for it ; and a good way to induce the county societies to adopt this programme of operations would be to grant them leave to refund to each of their members the full amount of his subscription in fodder seeds, such as timothy and clover seed, a privilege moreover which is granted to the farmers' clubs.

This is the opinion expressed by a large number of enlightened and practical farmers.

The purchase of breeding sires—should be made more judiciously than heretofore by the agricultural societies and farmers' clubs, before pur-

chasing a bull, why not take into account the predominating blood of the cattle? Why buy a Hereford or a Holstein bull, if Canadian blood predominates among the herds of cows in a county? Why infuse foreign blood into our herds of a different breed? New blood is undoubtedly needed, but always provided that the bull belongs to the type already existing in the county or parish for which the animal is intended.

Consequently what a sorry spectacle is presented by those exhibitions of cows combining the blood of four or five different breeds?

HERD-BOOKS.

If it be an advantage to the farmer, who aims at raising fine crops, to make a judicious choice of his seed grain and to devote long evenings to picking out the finest grains in his barn, why would it not be equally to the interest of the farmers to weed their herds and make a selection of their best milch cows?

The competitions in milch cows, established two years ago by the Department of Agriculture at Quebec, have done much in this direction and are the beginning of herd-books, which should be regularly adopted by all the farmers' clubs.

A good way to encourage the farmer to make a selection among his milch cows would be to enter in a herd-book the quantity of milk given in the space of a year by a certain cow, together with its name, and the names of its sire and dam, in order to establish a pedigree of our best milch cows.

HORSES.

"Le Soleil" of the 27th. November, 1900, published this: "The British authorities have decided to purchase within the next six months 50,000 horses in the United States for mounted police service in the Transvaal and Orange Free State."

On reading these lines, have not our farmers had occasion to regret the little attention they give to horse-raising and the haste manifested by them in getting rid of our good brood-mares? The statements of the

"*Bulletin de l'Agriculture*" of Belgium, in regard to horse-breeding, may well be also taken to heart here :

" If the breeding situation is as a whole brilliant, there are nevertheless parts of the country where the impetus which this industry is susceptible of taking, is arrested by the want of good stallions ; several special commissions have noted this defect and expressed the hope of seeing retained in this country, to the great advantage of our national breeding, a part of the choice animals now passing into the hands of foreigners."

In 1899, Belgium exported 27,589 horses at very remunerative prices, considering that they were all sold at from 1000 to 1600 francs each. In the province of Brabant, 18 months' colts have been sold at 750 to 900 francs.

Our agricultural societies should strain every nerve to secure for our farmers the service of first quality stallions and the best types of our brood mares should be entered in a pedigree book.

THE FARMERS' CLUBS

appear to be as popular as ever, but unfortunately it happens pretty often that secretary-treasurers, by their negligence in rendering their accounts, paralyze everything and cause the suspension of the grants.

They consequently deprive their parishes of a useful and important institution.

JOURNAL OF AGRICULTURE

What leads me to think that it is read more than formerly is the eagerness shown in complaining of the irregular transmission of the paper.

The blame is thrown upon the printer, but very frequently also the irregularity depends upon the secretary of the farmers' club, who badly makes out the list of subscribers or delays to send it in within the prescribed time.

CHOICE OF SEED GRAIN

I think it would be to the general interest if the farmers' clubs appropriated a small portion of their grant to create prizes in order to reward those succeeding best in making a judicious choice of a small quantity

of seed grain. This work might be done during the long winter nights or on the idle days occasioned by snow storms.

All the grain should be hand-picked and special prizes should be awarded for the best bushel of wheat, oats, peas, buckwheat, barley, &c.

The exhibition of these grains might be held during the first fortnight of April, in the public hall of the village, on Sunday, after mass, when the whole public should be admitted to admire the exhibits. The latter should be numbered, in order to keep the judges in ignorance of the owners. The grain might be afterwards sown in ground well cleaned by means of a previous hoed crop. This, I believe, would be one of the most inexpensive methods to secure for our province perfectly clean and productive grain.

A FEW WORDS ON MY ORCHARDS

I shall not refer, Sir, to small fruits such as currants, gooseberries, and strawberries which grow marvellously in our townships.

I shall confine myself to saying a few words with regard to my experiments with apple and pear trees.

When I planted apple-trees 8 years ago, I was looked upon by my fellow-countrymen as a visionary, a utopian and an extravagant.

It must be admitted, however, that apple-trees were very little known in our region.

To-day, 90 out of every 100 farmers have a small orchard.

I have two plantations, one of which, located on the north side, contains 160 and the other, on the south side, 140 apple-trees.

If I judge from the appearance of the trees, whose bark is least split and cracked, I prefer the position of the orchard on the north side, for the sun forces the bark less; but I would also advise the planting of maples and red maples around the orchard at a distance of 15 to 20 feet. I am of opinion that my maples give a great deal of protection to my apple trees against winds from the north and west.

Above all there must be a good fence to prevent the cattle from injuring the young trees, as they are very much coveted by farm stock.

To succeed well, it is essential : 1. That the soil should be well drained ; 2. That hoed crops should be raised on it during the four years following the planting of the trees ; 3. And that the grass should never be allowed to grow at the foot of the trees.

The fruit tree works in two ways : 1. In growing ; 2. In bearing. And, for this work, it must derive from the soil all that is essential for these two purposes.

To my mind, the best and most economical fertilizer is the *potash* from *hard-wood ashes*.

What greatly astonishes my neighbors is the production of my apple-trees, which, far from decreasing, seems to increase every year.

In a row of trees, I left in the fall of 1899 two apple trees without ashes, and since then I have remarked a great falling off in their bearing, while their fruits were also smaller.

I had in my orchard facing the south an old apple tree, which bore from time to time some puny apples and even these were few. I had decided to cut it down, when it occurred to me to try some experiments with it. I pruned it severely and boldly ; I turned up the earth at the foot with the pick as if I had wanted to punish it for its barrenness, and I threw in four shovelfuls of ashes which I mixed with the soil.

" There is one ", exclaimed my farmer, " whose Libera will be sung next year " He was astonished at the harsh treatment I had given it, as he had always seen me full of tenderness and care for my young apples trees. But he was quite astonished this year when he saw the abundance and large size of the fruit on this tree.

I have apple trees of all the varieties indicated on plans *ad hoc*.

If there be a variety more recommendable on account of its hardiness and its production than the others, it is certainly the "Wealthy." I have the satisfaction of stating that I have not lost one of these trees and that they are in bearing every year.

These apples are so much prized that I have sold 20 barrels at \$3 each and I regret very much that I did not plant more, as this year I would have realized \$250 to \$300.

This apple is the one that comes nearest to the Fameuse.

It is the future apple of the Laurentides.

I am therefore greatly tempted to change its outlandish name and call it "The Future Apple."

The variety which succeeded least is the "Early Strawberry."

The Fameuse apple grows well here; the tree is very hardy, but unfortunately the fruit suffers as everywhere else from the scab.

I treated two trees with the Bordeaux mixture and thereby saved them from this scourge and obtained a barrel of fine apples. I accordingly propose to treat all my Fameuse trees in the same way hereafter.

Last year I kept Wealthy apples until March by picking them from the tree before they were fully ripe and by wrapping them in paper.

The "Peach" apple, as a summer apple, is very recommendable.

Therefore, the two kinds of apples which I recommend specially for the Laurentides are : 1. The Wealthy ; 2. The Peach Apple.

I have the very great satisfaction, Sir, to inform you that a *pear tree* gave me this year six fine large pears, which attained their full maturity. And please note that they were table pears.

I am asking myself whether these are not the first pears grown in the Laurentides ; I would be glad to claim this honor.

I have four pear trees, vigorous, handsome and well shaped, but which produced nothing whatever, although planted eight years.

This year, one of them came, as stated, into bearing.

Mr. H. Nagant has congratulated me on my success. At first I thought he was joking, but no, for he tells me that pear trees seldom fruit before 15 or 20 years and he added his conviction that pear trees would succeed well in the Laurentides. I believe him, since mine are so fine and have begun to yield at the end of eight years. Consequently I intend to plant a few more next spring.

I strongly advise encircling the foot of the apple trees every fall with tarred paper to protect the bark against field mice.

This spring my neighbor, who had only six apple trees in his garden, had to cut them all down, as all the bark had been gnawed by the mice.

Lastly, Sir, I am of opinion that, with a little care, all the farmers of the province of Quebec can create productive orchards for themselves and I advise them specially to procure apple trees from the nurseries in the province.

The whole humbly submitted,

DR. W. GRIGNON.

Agricultural Lecturer.

OFFICIAL LABORATORY

OF THE

PROVINCE OF QUEBEC.

TO THE HONORABLE MR. DÉCHÈNE,

Commissioner of Agriculture.

Sir,

I have the honor to submit the report for the year 1899-90 on the operations of the Official Laboratory.

Last year's report extended to the 1st December. I was desirous of embracing in it the last competition (20th October) of the butter-manufacturers in order to place altogether before the reader the results of the different competitions of the year.

During the seven months since the sending in of this last report, I have made for the department :

The analysis and determination of the proportion of volatile acids in 8 samples of butter and the examination of 5 lactic ferments, at the request of Mr. Leclair, director of the Dairy School ;

The analysis of 9 samples of milk and 8 samples of cheese in the state of curd, at the request of Mr. Henry and Mr. Bourbeau, general inspector of cheese factories ;

The preparation of 6 deci-normal alkaline solutions to determine the acidity of milk, cream and whey, at the request of Mr. Leclair and Mr. Plamondon, assistant-inspector of cheese factories.

The inspectors of syndicates and the directors of dairy establishments asked for :

The determination of the fatty matter in 21 samples of milk sent by Mr. Corbière, of Lacolle ;

The preparation of a deci-normal alkaline solution for Mr. Monast, of St. Basile ;

The regulation of 2 lacto-densimeters and 2 thermometers for Mr Robinson, of Lacolle ;
 " of 1 lacto-densimeter for Mr. Point, of St. Angèle ;
 " of 1 lacto-densimeter and 1 thermometer for Mr. Lapierre ;
 " of 2 lacto-densimeters and 2 thermometers for Mr. Wherry, of Knowlton ;

The microscopical examination of 2 samples of milk containing numerous globules of colostrum ; one of these samples was addressed to me by Mr. Parent, of Drummondville and the other by Mr. Bourque, of St-Hyacinthe.

Other persons asked for :

5 analyses of minerals ;
 1 " of bituminous coal ;
 6 " of wax ;
 1 " vinegar.

I devoted a long time to three new studies, the importance of which will be apparent to all. For this purpose, I made :

The bacteriological examination of 3 samples of ice and 1 of water ;

The analyses of 6 samples of tobacco.

" of 10 " of maple syrup.
 " of 2 " of maple sugar.
 " of 6 " of ordinary sugar.

In the following pages, I give the reasons which suggested these last works.

As in the past, I also gave lectures on bacteriology, accompanied by demonstrations with the microscope, at the different courses of the dairy school.

I have the honor to be,

Your obedient servant,

C. P. CHOQUETTE,

Director of the Official Laboratory.

St-Hyacinthe College, 1st July, 1900.

STUDY OF THE PURITY OF NATURAL ICE.

Ice plays a great role in the preparation and preservation of many food substances. In this light, it is as worthy of interest as water.

The way in which ice forms has been the object of much study and many observations. Several natural philosophers, among others the Englishman, Tyndall, have devoted some very interesting pages to it.

When the temperature of the atmosphere falls towards the zero point of the Centigrade thermometer (degree 32 of the Fahrenheit thermometer) the surface of sheets of water radiates heat. There is a tendency towards the equilibrium of the temperature between water and the surrounding air. But this equilibrium is only established slowly. The specific heat of the water is so great and the conductibility of the air so feeble, that a diminution of a few degrees in the temperature of the water calls for a considerable time.

During the cooling process, an exchange takes place even in the strata of the water. Water at 4° C., is heavier than water at 0° C. Water, which, at the surface, has lost its heat, falls to the bottom of the lake or river; and this movement goes on as long as the mass of the water is not wholly at 4° C. As soon as this point is attained, the movement of exchange between the different strata begins. If the temperature be at 0° C or below zero, the free surface falls to zero and then the water congeals.

Ice is formed by the union of microscopic crystals. These crystals are generally in the form of a six-rayed star belonging to the system of the hexagonal prism. At the moment that the ice forms into a solid layer, the little crystals increase rapidly, to such an extent that the water appears pasty. Conforming to the mysterious law which presides over the formation of every crystalline substance, they seem to seek each other. Lighter than the water in which they have taken birth—the density of ice is only 0.92 of that of water—they unite at the surface and their contact becomes closer. The branches of the stars lock into each other, become cemented and thus the first coat of ice is formed.

The slow and spontaneous crystallization is a process of purification well known to the laboratories. But, to produce all its efficacy, this process must not meet with the slightest hindrance. If the crystallization is hastened by any artifice whatsoever, the crystals will be irregular, without limpidity and therefore impure. But, in the normal formation of ice, the crystals form slowly and agglomerate slowly. Before passing into the state of ice, the water has purified itself by a slow and prolonged downward and upward movement. Nature here gives points to the ablest chemist, who cannot, in his laboratory, effect with such care the crystallization of any substance.

Is it necessary to conclude that ice, formed under the conditions which I have specified, is pure? In this transformation, the water frees itself from mechanical impurities, clay, vegetable debris, etc., etc. It loses the population of infusoria and organisms more or less coarse with which it is frequently invaded and, what is more astounding, it loses its color and rids itself of the pathogenic and other bacteria, however numerous they may be.

The first coat solidified is pure; this annexes to itself from below other and successive coats, all formed in the same way, always crowding back the impurities of every nature into the mass that remains liquid. The result is that the water remaining imprisoned under a coat of ice is enriched with all the filth of which it rids itself. Water is less pure in winter than in summer. Dr. Roux, of Paris, established this fact and has recorded it in his manual of the "Bacteriological Analysis of Drinking Waters." Another consideration, which has its importance, is that such water is withdrawn from the purifying action of the sun, which is the great exterminator of bacteria. This truth has given rise to a well known and truthful axiom. Further, bacteria do not grow at a temperature in the neighborhood of 0° C. They are struck with lethargy. They do not die—a cold of 200 degrees below zero does not kill them—but they do not play their normal role. Bacteria live upon bacteria; there is a constant struggle between them. Under the ice, universal peace reigns. The population remains intact and the bacteria dragged along by the currents ceaselessly arrive to increase their numbers.

What is the quality of the ice arising from re-gelation; of those mount-

ains formed during shoves when the ice floes carried along by a violent current pile up in a more or less homogeneous mass? It is obvious that in this disorder of nature, the ice is no longer natural ice. In cementing one to the other, the fragments imprison a good deal of water which becomes ice, it is true, but which has not undergone the process of purification through which natural ice slowly passes in the course of formation.

The same remark applies to the opaline ice called *névé*, which, after the melting of the snow in winter, covers the first ice. This melting of the snow scatters on all sides the impurities accumulated along the roads traced over the frozen water courses. When cold sets in, these impurities become fixed and incorporated with the first which they unquestionably defile.

For some years past, the ice crop at St. Hyacinthe has been taken from below the intake of the city water-works, from a point where the river Yamaska, contaminated by the sewage from several private residences on the banks, contains 230 bacteria per cubic centimetre. The local board of health took alarm at this practice and asked me to determine the quality of the ice harvested. The latter appeared very fine and perfectly homogeneous, presenting along the whole cut a beautiful emerald green color. I selected samples taken from three points distant about 100 feet from each other and undertook their examination with all the requisite care. I deem it useful to describe in a few lines the progress of this examination. In the first place, it was necessary to obtain the assurance that the ice had not been contaminated by the water on which it had floated at the moment of cutting. For this purpose, holding the piece of ice with a pair of pinchers passed through the fire, it is bathed with water sterilized and still lukewarm until it has been reduced to a tenth of its size. It is then placed in a phial containing 100 c. c. of sterilized water. The increase of weight gives the weight of the ice and the percentage of water from the melting. Then the sowing only remains to be done, with the usual precautions, in the different nutritive mediums.

I kept the sowings in view during four days at a temperature of 22° c., then during two days at a temperature of 35° c. and during two days more at the temperature of the laboratory. During all this time, the broths and the gelatine had retained their limpidity. I could not discover a single colony.

The ice was therefore pure and free from all bacteria.

ANALYSES OF CANADIAN TOBACCOS.

Much attention is given in this province to the culture and manufacture of Canadian tobaccos and it is claimed that in this culture there is an important source of revenue for the farming class. Is it true that growers look more to the quantity than to the quality, without regard to the requirements of trade and industry?

I believe that chemistry can render service to the growers. I am aware that fashion and habit cause such or such a tobacco to be more patronized at times than another and that smokers very seldom agree as to the qualities of Nicot's plant. If the tobacco burn well, if it leave a white, crumbling ash, if it do not smart the tongue, they will nearly always say: *It is good*. The flavor, which should be the basis of the estimate, is often relegated to a position of secondary importance.

There are two great classes of tobacco; cigar tobacco, whose soft thin, fine-grained leaf is sought for the wrappers of cigars, and the tobaccos suited to any other purpose.

I have nothing to say at the moment as regards cigar tobacco; its qualities can hardly be appreciated by chemical analysis. In the other tobaccos, it will determine the strength, the degree of combustibility, the character and the composition of the ash.

Nicotine is the most important element of the strength of tobacco. The combustibility and the ash depend upon several mineral salts, potash and lime among others.

Chemists have not yet established a certain relation between the data of the analysis and the qualities of the tobacco.

The analyses made by me were only preliminary experiments. The samples which I had in hand presented no well defined characteristics. They were not bad and they were not very good. The nature of the soil, (to which I attach much importance) on which these samples were raised, was not determined.

Proportion of Nicotine.—The determination of this is the most difficult part of the analysis of tobaccos. The proportions of the other ingredients are determined by well known processes.

The following is the process which I followed to ascertain the proportion of nicotine. The tobacco, thoroughly dried and pulverized, is placed in contact for twenty four hours with a twenty per cent solution of sulphuric acid. The filtered extract is concentrated to the consistency of a syrup, strongly alkalized by soda, to which is added its volume of alcohol at 85° and then distilled in a bath of sand until white vapors appear towards 180° C. The distilled product, which should contain the nicotine, is titrated with a deci-normal solution of sulphuric acid. Provided that the temperature be always maintained at the same degree, this process gives concordant results, but it is probable that there still remain some hundredths of the nicotine which do not pass through the distillation.

The chemists of the tobacco factories in Paris employ another process, of which I have been given the details. The operations are based on a single quantitative analysis made directly on a tobacco, which is taken as the type. The subsequent determinations are comparative and based on the number of cubic centimetres of the acid solution required by the aliquot parts of the extracts simultaneously obtained by means of sulphuric ether, and of the typical tobacco and the other tobaccos submitted to analysis. I have procured a sample of this typical tobacco and upon it I shall base my analyses in future.

To ascertain the combustibility, I chose some leaves representing the average state of tobacco and I dried them during 24 to 28 hours in the temperature of the laboratory. Then, holding these leaves extended horizontally, I applied to them, at different points and so as to pierce the leaf, an incandescent Berzelius carbon. I then withdrew the carbon and noted the number of seconds during which the fire remained alive. In the case of good uncured tobaccos, the fire should burn for fifteen seconds, and in that of the same tobaccos cured, for twenty seconds.

The following is the result of the analysis of some Canadian tobaccos grown at St. Hyacinthe. I give the names as supplied by the seller:

NAME OF TOBACCO.	WATER.	NICOTINE.	ASH.	COMBUSTIBILITY.
	o/o	o/o	o/o	
Havana.....	12.16	2.62	19.82	16-18 seconds
Turkish	13.00	4.94	19.35	6-8 "
Cannelle.....	12.82	3.66	23.71	8-10 "
Grammont.....	16.0	2.55	21.58	6-8 "
Obourg.....	12.05	3.85	21.90	4-6 "
Spanish.....	17.07	3.14	17.08	10-12 "

It is interesting to note that these tobaccos, kept for several days in an open jar in the laboratory and whose stiff and crumbling leaves indicated almost complete drying, nevertheless contained in that state a weight of water running up to 17 per cent.

Percentage of lime and potash in the ash of these same tobaccos :

	LIME.	POTASH.
Havana.....	21.01	23.47
Turkish.....	16.18	24.40
Cannelle.....	13.67	15.92
Grammont.....	14.41	15.57
Obourg.....	8.00	18.38
Spanish.....	18.00	29.82

I find in Baudrimont's Dictionary the following table of the richness in nicotine of several French and foreign tobaccos, according to Mr. Schlœsing :

FRENCH TOBACCOS.

Tobacco from Lot.....	7.96 p. 100
“ “ Lot et Garonne.....	7.34
“ “ Nord.....	6.58
“ Ile-et-Vilaine.....	6.29
“ Pas de Calais.....	4.94

FOREIGN TOBACCOS.

Virginia Tobacco.....	6.87
Kentucky “.....	6.09
Maryland “.....	2.29
Havana “.....	less than 2.00
Paraguay Tobacco. { 1st class, Overo.....	6.00
{ 2nd “ Canela.....	5.50
{ 3rd “ Colorado.....	2.00
{ 4th “ Villa Ricca.....	1.80

On the other hand, the North Carolina experimental station, bulletin No. 122, gives the composition of some typical tobaccos grown in the United States :

STATE	VARIETY	NICOTINE p. 100
New-York.....	Havana.....	1 96
Florida.....	Leaf wrapper..	2.40
Kentucky.....	London strip.....	3.54
".....	White Burley.....	4.65
Massachussetts.....	Havana, hybrid.....	3.56
Connecticut.....	" seed leaf.....	3 36
Virginia.....	Austrian wrapper.....	3.02
".....	Italian Regia.....	4.34
".....	French ".....	4.05
Ohio.....	Ohio Spanish.....	3 33
North Carolina.....	Bright wrapping leaf...	2.72
" ".....	Mahogany.....	2.50

Imported foreign tobaccos :

Havana.....	2.0-3.98
Sumatra.....	2.38
Java.....	2.30
Japan.....	1.80-3.92
France.....	5-8
Italy.....	1.62-5.99

These figures are instructive, as enabling us to judge of the relative value of our Canadian tobaccos.

Mr. Labelle, the author of an excellent little treatise on the culture and manufacture of tobacco, who is well acquainted with the different varieties grown in the counties of Montcalm and Joliette, &c, has kindly promised me samples gathered on different soils and under different conditions. The establishment of a cigar factory in St. Hyacinthe, which buys tobacco in all the tobacco-growing centres, will give me in addition the choice between a number of varieties. I shall endeavor in the first place to find out whether there is a constant relation between the qualities of the tobacco, its chemical composition and the nature of the soil.

MAPLE SYRUP AND SUGAR.

It is unhappily too true that maple syrup and sugar are adulterated. This dishonest practice, which only four years ago was almost unknown in the Province of Quebec, as stated in bulletin No. 45, published by the Inland Revenue Department at Ottawa, has spread throughout our rural districts and, what is worse, the adulterators have become really skillful. Formerly, the adulteration was effected with starch-sugar, glucose; since then it has been ascertained that cane sugar, the ordinary sugar of commerce, may be utilized more advantageously for the same purpose.

Glucose is not an element foreign to maple sugar. Under ordinary conditions and when freshly made, the latter contains only a few hundredths of it, but the spontaneous fermentation which frequently develops in badly prepared syrups, may raise the proportion of glucose to 15%. The chemical reactives, as well as special instruments, such as the polarimeter, enable its presence to be easily detected.

Cane sugar, beet sugar and maple sugar are all of the same nature. Chemical analysis shows no difference between them. The addition may be made in any proportion so long as the mixture retains the particular taste of maple sugar. With 75% of cane sugar added, maple sugar still keeps this taste to a notable degree and the fraud is tempting in these days when first quality cane sugar sells for only 5 to 6 cents per lb, for 100 lbs of the latter corresponds to 160 lbs of syrup.

I made 10 analyses of maple syrup and 2 of maple sugar. Knowing the difficulties presented by the task, I gave the most minute attention to it. But, in every case, the chemical tests only yielded me negative or simply doubtful results even when, by tasting, I could not hesitate to believe that I had in hand only a common solution of the sugar of commerce. I was greatly perplexed and was about to declare my inability to detect the fraud, when the idea occurred to me to try the microscope and it was not long before I had reason to congratulate myself on this test. I ascertained that the microscope is the only instrument to detect the fraud in question.

I prepared a ten per cent solution of the suspected sample, that is to say, 2 ounces of syrup or sugar to 20 ounces of distilled water, perfectly limpid. I poured the solution into a narrow test tube and let it rest for 48 hours. I then removed, by means of a syphon, the limpid part and submitted the more or less muddy residue of the solution to the centrifugal apparatus of the laboratory. I thus obtained in very small volume the insoluble impurities contained in the sample. I spread these out in a light layer on one or several sheets of glass, where I allowed them to dry. I then examined them with the microscope, beginning with an enlargement of 50 diameters and exploring successively all parts of the deposit.

The glucose revealed itself by the grains of starch that had escaped from the saccharization ; the honey by the grains of pollen.

Maple sugar sometimes shows small fibres of cotton or wool probably torn from the strainer, but always and ever a quantity of a white, crumbling, amorphous substance ; while the sugars of commerce, even the fine crystallized white sugars, all presented to me the very characteristic elements of vegetables. In the white sugars, these are cells bearing areolar dots or points similar to those in fir wood. In the case of less pure sugars, the yellow and brown Muscovado sugars, so great a quantity of these vegetable debris—graticulated and other cells—is obtained that the field of the microscope is obscured with them. The raw sugars yield, in addition, together with a good deal of sand, the dead bodies of acari.

It would seem astonishing and almost incredible that white sugar, in spite of all the filterings, to which the juice of the cane and the beet is subjected before crystallization, should still contain vegetable debris. But the fact is certain. I cannot assert that these cells are well and truly the cells of the cane or the beet. They may come from somewhere else. They may be derived from the hogsheads, the barrels or even the paper in which the sugar is stored and delivered. This remains to be determined.

Mr. Macfarlane, head of the Ottawa laboratory, whose special business is investigating the adulteration of foods, and Mr. McGill, his first assistant, to whom I communicated these facts, have promised me to give

them their attention. I have reason to believe that these gentlemen, with the cooperation of their assistants and with the greater time at their command than I have, will succeed in thoroughly enlightening us on this question. On my part, I will examine some twenty new samples.

I do not think that we shall, by this process, succeed in establishing the exact percentage of cane sugar or adulterated maple sugar, but an important point will be gained in being able to state with certainty that fraud has been committed and moreover I believe that this would be sufficient to warrant judicial proceedings against the delinquent.

RESULT OF THE EXAMINATION OF SAMPLES OF MAPLE SYRUP AND
SUGAR AND COMMERCIAL SUGARS'

<i>Maple syrup, fresh, made on the College farms :</i>	<i>Invert sugar (glucose)</i>	<i>Crystallized sugar (sac- charose.)</i>	<i>Insoluble matter ; ap- pearance under the microscope.</i>
	o/o	o/o	
No. 1.....	0. 60	63. 6	White, amorphous sub- stance.
No. 2.....	0. 71	65. 4	Small fibres of cotton.
<i>Other samples purchased in the neighborhood of St. Hyacinthe :</i>			
J. C., Rougemont... ..	0. 63	65. 0	White, amorphous sub- stance.
A. L., La Présentation...	0. 40	64. 06	"
J. P., " ...	1. 10	65. 0	"
P. C., St-Dominique.....	4. 5	63. 2	" Small fibres of wool ; old, fermented syrup, recently boiled
A. G., Rougemont.. ..	0. 41	63. 47	Amorphous substance.
J. G., St-Valérien.....	3. 8	62. 4	" fermented syrup.

Adulterated Syrup :

No.1.—Adulterated with white sugar....	0. 30	64. 5	Dotted cells.
No.2.—Adulterated with white sugar....	0. 43	62.	"

Maple Sugar :

No. 1.—Having a very slight taste of maple sugar....	6. 14	Graticulated cells, in very large number ; adulterated with 90 o/o of brown sugar.
No. 2.—Same taste as No. 1.....	6. 97	"

<i>Commercial Sugar :</i>	<i>Invert Sugar :</i>	<i>Insoluble matter : Appearance under the microscope :</i>
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White sugar No. 1.....	0. 06	Dotted cells.
" No. 2.....	0. 03	" "
White sugar	1. 26	" "
Yellow "	2. 83	Dotted cells and some gra- ticulated cells, debris of cane pith.
Brown "	5. 08	.....	Graticulated cells, in very large number, debris of pith.
Raw sugar.....	4. 90	.....	Graticulated cells, sand and bodies of acari.

VINEGAR.

It is well to remember that there is *proof vinegar*, as well as *proof alcohol*.

To conform to the excise laws, the vinegar manufacturer is obliged to establish the strength of the product manufactured. This operation enables him to render account of the alcohol which the Inland Revenue Department authorizes him to convert into vinegar without paying excise duties.

But the buyer and consumer do not look to this so closely. In most cases, they judge, by taste simply, the strength and value of a sample of vinegar.

Proof vinegar should contain 6 % of acetic acid. The test is very easy. A normal solution of soda and ten minutes' work are all that are needed to make the determination.

Strength of a sample of vinegar presented by Mr. Bourgeois, of St. Hyacinthe :

Normal soda in CC.....	9.9
Acetic acid %.....	5.049
Strength under proof.....	15.85

C. P. CHOQUETTE,

Director of the Laboratory.

COMPETITIONS OF DAIRY PRODUCTS.

TO THE HONORABLE COMMISSIONER OF AGRICULTURE.

Sir,

As in preceding years, the department, in the course of last summer, organized competitions of dairy products, two of which were held at Montreal and one at Quebec.

One of the great obstacles to better prices for our dairy products is to be found especially in the want of uniformity. Thus, during the competitions which took place at Montreal, several boxes of cheese examined by the judges were really unfit for consumption. Still they must have been sent in good faith by the makers, who considered such products as of good quality.

The enquiry which was made in England by one of the officers of the department in regard to the manufacture of Cheddar cheese enabled the latter to learn on the spot the way in which our cheese is appreciated. A good proportion of our products in this respect is regarded as of excellent quality, but, as in a same consignment there is always a certain number of boxes of positively inferior quality, the general quotation for the cheese is heavily reduced. If the competitions in dairy products served no other purpose but to enable us to ocularly note the lamentable inferiority existing in certain dairy products intended for export, it would be already sufficient to establish their utility.

We can thus better ascertain our bearings and give a more assured direction to the improvement of our products by trying to remove the chief defects which depreciate their value.

The most general defect noted by the judges in the competitions of last summer relate especially to the packing. Of 49 exhibits of cheese, the judges found that 40 were packed defectively in boxes that were either too wide, too big or too low and without that appearance of cleanliness which, at first sight, leaves a favorable impression of the product contained therein.

This defect can be easily remedied and it is to be hoped that factory proprietors will take measures to obviate it as soon as possible.

We append a list of the competitors, who were prize-winners at the different competitions during the summer.

FIRST COMPETITION.

Held at Montreal on the 21st July, 1900.

JUDGES :

Of the butter :—Messrs. Ayer, Vaillancourt and Leclair.

Of the cheese :—Messrs. Ayer, Vaillancourt and Plamondon.

LIST OF SUCCESSFUL COMPETITORS.

BUTTER.

1. H. Weston Parry, butter maker of the Compton Model Farm,
Compton..... 97 pts.
Silver medal, first class diploma and \$9.00 in money.
2. H. Gareau, St. Télesphore (Soulanges)..... 95 “
Bronze medal, second class diploma and \$5.00 in money.
3. L. J. Monat, St. Bazile-le-Grand (Chambly)..... 94½ “
Bronze medal, second class diploma and \$4.00 in money.
3. L. Morrison, East Hatley (Stanstead)..... 94½ “
Bronze medal, second class diploma and \$4.00 in money.
4. J. H. Leclerc, St. Polycarpe (Soulanges)..... 94 “
Bronze medal, second class diploma and \$3.00 in money.

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4. J. B. Reed, Hatley (Stanstead)..... 94 pts
Bronze medal, second class diploma and \$3.00 in money.

No prize was awarded for the cheese.

SECOND COMPETITION.

Held at Montreal, on the 8th September, 1900.

JUDGES :

Of the butter :—Messrs. J. D. Leclair, A. J. Ayer and E. A. Brice.

Of the cheese :—Messrs. J. A. Plamondon, A. J. Ayer and E. A. Brice.

LIST OF SUCCESSFUL COMPETITORS

CHEESE

Mr. Ephrem Lizée, Marbleton, county of Richmond : 93½ points,
second class diploma, bronze medal and \$2 in money.

BUTTER

Mr. Clovis Lemay, Saint-Henedine, county of Dorchester : 94 points,
second class diploma, bronze medal and \$3 in money.

Mr. H. J. Allen Foster, county of Brome : 94 points, second class
diploma, bronze medal and \$3 in money.

Mr. Ernest Dubé, L'Assomption, county of L'Assomption, 93½ points,
second class diploma, bronze medal and \$2.00 in money.

THIRD COMPETITION

Held at Quebec on the 6th October, 1900.

JUDGES :

Of the butter :—Messrs Jos. Emond and J. D. Leclair.

Of the cheese :—Messrs J. A. Vaillancourt and J. A. Plamondon.

LIST OF SUCCESSFUL COMPETITORS

CHEESE

1. Adelard Hamel, Ste-Croix, county of Lotbinière:—97½ points silver medal, first class diploma, and \$10 in money.

1. Joseph Emile Pelletier, St-Martin, county of Beauce:—97½ points, silver medal, first class diploma and \$10 in money.

2. J. L. C. McDuff, Egypte-de-Milton, county of Shefford:—97 points, silver medal, first class diploma and \$9 in money.

3. J. P. Moreau, St. Tite, county of Champlain: 94½ points, bronze medal, second class diploma and \$4, in money.

3. Joseph Pairon, Notre-Dame de Laterrière, county of Chicoutimi:—94½ points, bronze medal, second class diploma and \$4 in money.

4. Eugene Michel, St. Patrick's Hill, county of Arthabaska:—94 points, bronze medal, second class diploma, and \$3 in money.

4. Louis Bibeau, St-Flavien, county of Lotbiniere:—94 points, bronze medal, second class diploma and \$3 in money.

4. Odilon Michel, St. Féréol, county of Montmorency:—94 points, bronze medal, second class diploma and \$3.00 in money.

4. Theophile Levesque, Old Lake Road, county of Temiscouata:—94 points, bronze medal, second class diploma and \$3 in money.

5. Isidore St-Pierre, Roxton Pond, county of Shefford:—93½ points, bronze medal, second class diploma and \$2 in money.

BUTTER

Didace Kirouac, St-Narcisse, county of Lotbiniere:—98 points, silver medal, first class diploma, and \$11 in money.

2. J. E. Z. Marchand, Ste-Anne de la Perade, county of Champlain ;
—97 points, silver medal, first class diploma and \$9 in money.

3. Pierre Bisson, St. Sylvester East, county of Lotbinière. 95 points,
bronze medal, second class diploma and \$5 in money.

4. Eugène Métivier, St. Patrice de Beaurivage, county of Lotbinière.
—94½ points, bronze medal, second class diploma and \$4 in money.

A copy of the notes of the judges was sent to each competitor, who can by this means learn for himself the qualities and the defects of his exhibit.

Before concluding this brief statement, I take the liberty of making a few more observations upon the relatively limited number of competitors, who responded to the call of the department and took part in these competitions.

It is to be regretted that a larger number of manufacturers do not avail themselves of the advantage held out to them by the department to have their products examined, because, from this examination made by judges of recognized competence, a most useful lesson may be drawn by them. And as the freight charges and the value of the exhibits are assumed by the Department of Agriculture, there should be more eagerness to profit by the advantages offered to factory proprietors over and above the honorary and money rewards placed at their disposal.

On the other hand, these competitions seem to be more and more appreciated and it is to be hoped that in future the relative apathy complained of will disappear and that all who are invited to compete will hasten to send us samples of their products.

Quebec, 11th December, 1900.

ALPHONSE E. LEGARÉ,

Secretary *pro tempore*
of the Competitions.

INSPECTION OF BUTTER AND CHEESE FACTORIES.

TO THE HONORABLE F. G. M. DÉCHÈNE,

Commissioner of Agriculture.

Sir,

I have the honor to submit my first annual report as inspector of butter and cheese factories for your department.

I commenced my inspections on the 15th May, 1900, and completed them on the 4th December instant.

I visited 165 factories, 52 of which were of butter, 78 of cheese and 35 of both combined. Of this number of factories, several were visited twice and upwards, according to necessity.

As a general rule, in my tour of inspection, I had to work one day in each factory : and it has happened in some particular cases that I had to give two days' work. On the other hand, in the factories whose management seemed good, I confined myself merely to taking the report.

It is my duty to inform you also that, at special request, I was obliged to visit the syndicated factories and even to work in them in view of absolute necessity.

I can only congratulate and thank the honorable Minister, as well in my own name as in that of the manufacturers visited, for his commendable idea in naming inspectors for the unsyndicated factories, which must powerfully tend to attain the object he has in view of securing uniform products of superior quality throughout the entire province.

The creation of syndicates undoubtedly offers precious advantages to attain this end, but by this new system of inspection, the Hon. Minister has understood that the progress made will be more rapid and sure by including the large half of the factories which had not the benefit of

being visited by the inspectors. I can state with satisfaction that, in all the region which I traversed, manufacturers and patrons highly appreciate this new method and appear to understand the advantages, which they derived from these visits, by asking that they be made more frequently in the future.

The general defects which I remarked in the course of my inspection were the following : Incompetency of the manufacturers in the mode of regulating their centrifugals and want of cleanliness.

It is a recognized fact that, to obtain uniform butter, it is needful in the first place to have uniform cream, which we also must know how to ripen uniformly. A manufacturer, who ignores the force of his centrifugal, who does not know how to regulate it, cannot obtain uniform cream and loses either in the yield or the quality, as the case may be.

A thing which is not done in the factories, but which I strongly recommended and which has been appreciated and adopted by all to whom I communicated its importance, is a small book in which a daily entry is made of the quantity of milk received and the quantity of butter made from such milk, in order to establish the good or bad yield each day and in such case to remedy it. Further, this book prevents the oversights and the losses which sometimes involuntarily creep into the daily sales.

What I remarked especially in the cheese factories is the difference in the cooking of the cheese. Between one factory and another (well understood, of course, those which had never been visited by an inspector) I noted as many as 15 degrees of difference in the cooking.

This defect can only be attributed to the incompetency of the manufacturers. A great many put themselves at the head of factories, who do not know the alphabet of the trade, after an apprenticeship of a few weeks or a few months. It is not surprising therefore that a bad output is to be noted in such factories, that they make a product of inferior quality and that no remedy can be applied.

What I find at least quite as deplorable are the negligence and the unpardonable want of cleanliness of too many manufacturers unfortunately. To my mind, a dirty manufacturer will never succeed in doing

first quality work, for his negligence will prevent him from seeking to learn the secrets of the trade. In the first place, starting from the raw material, an untidy manufacturer will receive indifferently bad milk and good milk and the latter will be quickly affected by the bad smells emanating from all parts of his factory. The cream, the butter or the cheese derived from such milk, will be of inferior quality.

I have satisfied myself that three-fourths of the losses noted in the quality of the butter and cheese occur in the badly kept factories. Happily, I am able to state that these are few, and, to give you an idea on the subject, I took some notes.

Of the 165 factories visited, I classed 47 as very clean, 88 as fairly so and 39 as dirty.

If I were permitted to here express my humble opinion, I would say that it is essential that competent inspectors should have the right to warn these manufacturers and, if there be no change, to subject them to a penalty or to close their factories. This would be a powerful means of obtaining a uniform product of superior quality and at the same time of combatting the unreasonable opposition that does injury to the other factories, while also obviating the considerable losses which generally occur in this class of factories.

I am glad to see by the prices obtained for our dairy products on the foreign markets that the improvement is marked from year to year, but I note that much still remains to be done.

You will find hereto annexed a list of the factories which I visited during the season.

The whole respectfully submitted.

By your humble servant,

S. CHAGNON.

Inspector.

COUNTIES.	B.	C.	Com.	
Argenteuil		3		
Berthier.....	2	15	5	
Two Mountains.....	9	6	5	
Hochelaga	1			
Jacques Cartier	6			
Joliette	2	7	2	
L'Assomption.....	6		4	
Maskinongé.....	2	16	10	
Montcalm	1	8		
St-Maurice.....	1	7	7	
Terrebonne.....	9	5		
Vaudreuil	1			
Verchères.....	6	2	1	
	46	69	34	Total : 149 factories, plus the reports of the 4th to the 9th June and those of the 22nd Sept. to the 8th Oct.

VERCHÈRES

MUNICIPALITIES.	PROPRIETORS.	POST OFFICE ADDRESSES.	B.	C.	Com.
Varennes-Baronnie.....	Manufacturing Company....	Varennes .....	.....	.....	1
“ Picardie.....	Oct. Allard.....	“ .....	.....	1	
“ Pays Brûlé	Léon Beauchemin.....	“	1	.....
Ste-Julie Village.....	A. Chicoine.....	Ste-Julie.....	1	.....
St-Marc—1st range.....	Alexis Chicoine.....	St-Marc.....	1	.....
St-Antoine Village.....	Cartier, Archambault & Co..	St-Antoine.....	1	.....
Ste-Théodosie “	Manufacturing Company ...	Ste-Théodosie..	1	.....
Petit Côteau de Verchères...	Ludg. Millette.....	Verchères.....	.....	1	
Verchères Grande Côte.....	Jos. Dansereau.....	“	1	

VAUDREUIL

Ile Perrot-Montée St-Jos.....	Dieudonné Cyr.....	Ile Perrot.....	1	
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STE-MAURICE

Yamachiche, Little Beech r.	L. E. Lajoie & Cie.....	Yamachiche	1	
Yamachiche Village.....	Adrien Millot	“	1
St-Etienne des Grés.....	Nap. Ringuette.....	Vieilles Forges.....	.....	1	
St-Boniface, 4th range.....	Télesphore Pellerin.....	Shawinigan.....	.....	.....	1
Shawinigan, 8th range	Célestin Bellemare.....	“ .....	.....	1	
Ste-Flore, Chemin des Perles.	Aldéric Leblanc.....	Ste-Flore .....	.....	.....	1
“ Petite Rivière.....	Norbert Fleury.....	“ .....	.....	1	
Ste-Flore Village.....	Hilaire Lupien.....	“ .....	.....	.....	1
St-Mathieu, 2nd range.....	Thomas Desiel.....	St-Mathieu .....	.....	1	
“ Lake Bellemare.	Raphaël Duchène .....	“ .....	.....	1	

ST-MAURICE.—Continued.

MUNICIPALITIES.	PROPRIETORS.	POST OFFICE ADDRESSES.	B.	C.	Com.
Shawinigan, 6th Range.....	Alb. Corriveau	Shawinigan			1
St-Elie, 5th Range.....	Odilon Gelinat.....	St-Elie.....	1		
St-Barnabé, 1st Range.....	Wilfrid Alliot.....	Moulin Charrette.....			1
“ “	Philippe Gélinais.....	St-Barnabé.....			1
St-Sévère, Bellechasse Rge...	Toussaint Grenier	Ste.Ursule.....	1		

MASKINONGE

St-Joseph.....	Sicard Grenier and Lebrun.	St-Jos. Mask.....	1		
St-Justin Village.....	Wilf. L'Heureux.....	St-Justin.....			1
Ste-Geneviève Rge. “	Pierre' Bussière.....	“	1		
Louiseville.....	Adrien Milot.....	Yamachiche.....	1		
St-Léon Village.....	Hector Caron.....	St-Léon.....			1
“ Barthélemy Rge.....	Jos. Pichette.....	“	1		
“ St-Charles Rge.....	Dolp. Lessard.....	Ste-Ursule.....	1		
“ Ht de la Riv. du L.	Adolphe Allard. ...	Louiseville	1		
“ Grande Acadie.....	Thomas Roy.....	St-Léon			1
Ste-Ursule Village.....	Bastien and Paquette....	Ste-Ursule.....			1
“ Double range.....	Chs. Torneur.. ..	“			1
“ Crête de Coq.....	Norbert Fleury	“	1		
“ Fontarabie.. ..	Nap. St Louis.....	“			1
“ Beaupré Range.....	Adolphe Lessard.....	“	1		
St-Léon. Grand Range.....	Wilbrod Ferron.....	St-Léon.....			1
St-Paulin Village.....	Henri Bergeron.. ..	St-Paulin.....			1
“ Grand Line.....	F. R. Paquette.....	“	1		
“ Picardie.....	Henri Bergeron.....	“			1

MASKINONGÉ.—*Continued.*

MUNICIPALITIES.	PROPRIETORS.	POST OFFICE ADDRESSES.	B.	C.	Com.
St-Alexis des Monts.....	"	"	1	....
" Riv. du Loup.....	Philias Allard.....	St-Alexis des M.....		....	1
St-Didace Govern. road.....	Narcisse Perrault.....	St-Didace.....		1	
" Village.	Thomas Rivard.....	" .....		....	1
" Riv. Mastigouche..	George Lefrançois.....	Mastigouche.....		1	
" 1st Rg Mondeville.	Alfred Morin.	St-Didace.....		1	
" River.....	Denis Barrette.....	"		1	
" Grand Portage.....	Thomas Rivard.....	"		1	
St-Didace. Ruisseau plat.....	E. Ringuette	"		1	
" 1st Rge Mondeville	Bergeron and Gingras.....	"		1	

MONTCALM

Rawdon 4th Rge.....	Camille Beauséjour.....	Rawdon.....		1	
" Kildare Rge.....	Onésime Breault.....	"		1	
" 8th Range.....	Rich. Parkinson.....	"		1	
" 7th "	Pierre Gibord.....	"		1	
Cordon Ste-Julienne.....	Louis Roy.....	St-Thomas.....		1	
St-Alexis Upper Grand Lines	O. Magnan.....	St-Alexis	1	....
St-Calixte Kilk 10th Rg.....	Euclide Thinel.....	St-Calixte de Kilkenny		1	
St-Emile Village.....	Ovila Coutu.....	St-Emile.....		1	
St-Donat "	Jos. Lavoie.....	St-Donat		1	

L'ASSOMPTION

MUNICIPALITIES.	PROPRIETORS.	POST OFFICE ADDRESSES.	B.	C.	Com.
St-Henri de Mascouche.....	Alp. Marien.....	Mascouche	1	.....
" de Grand Côteau...	Ad. Bourgeois.....	do	1	.....
St-Roch L'Achigan.....	Albani Forest.....	St-Roch l'Ach.....	1	.....
Cabane Ronde, Mascouche...	Ernest Dubé.....	Mascouche.....	.....	.....	1
Lachenaie	Chs A. Laurier.....	Lachenaie.....	1	.....
St-Paul l'Ermite, Village.....	Paul Brisset.....	319 Sherbrooke, Mont .....	.....	.....	1
" Presqu'île.....	Philéas Léveillée.....	St-Paul l'Ermite.....	.....	.....	1
St-Sulpice, Grande Côte.....	Jos. Robitaille.....	St-Sulpice.	1	.....
L'Assomption.....	Village Corporation.....	L'Assomption.....	.....	.....	1
"	Ls. St-Jean.....	"	1	

HOCHELAGA

Pointe aux Trembles.....	Paul Brisset.....	319 Sherbrooke, Mont	1	
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JOLIETTE

Lavaltrie—Petite rivière Rge	Jos. Chênevert.....	Lavaltrie	1	
St-Thomas Village.....	Maxime Coutu.....	St-Thomas.....	1
St-Ambroise—6th Range....	Ephrem Beauregard.....	St-Ambroise.....	.....	1	
" 7th Range	Clovis Blouin.....	" .....	.....	1	
St-Alphonse de Rodriguez ...	Thériault & Frère.....	St-Alphonse... ..	1	.....
" 2nd Range	Alfred Préville.....	" .....	.....	1	
" Petit Chertsey..	George Trudeau .....	" .....	.....	1	
" Assomption Rge.	John McDonald.....	" .....	.....	1	
St-Côme Village.....	Chs. Blain.....	St-Côme.....	.....	.....	1

JOLIETTE.—Continued.

MUNICIPALITIES.	PROPRIETORS.	POST OFFICE ADDRESSES.	B.	C.	Com.
St-Côme, 10th Range.....	Ls. Gauthier.....	St-Côme.....	.....	1	
“ Belœil Rge.....	Simon Aumond.....	“ .....	.....	1	

TERREBONNE

Ste-Lucie, Doncaster, 6th Rge	Israël Thouin.....	Ste-Lucie.....	.....	1	
Ste-Adèle Village.....	E. Brosseau.....	St-Sauveur.....	1	.....
“ Wexford Township	“	“	1	.....
St-Hypolite Abercrombie....	“	“	1	.....
St-Sauveur Village.....	“	“	1	.....
Côte St-Gabriel de St-Sauv...	“	“	1	.....
Lake Marois de St-Sauveur...	“	“	1	.....
St-Jérôme N. O. R. north....	“	“	1	.....
“ Riv. à Gagnon....	“	“	1	.....
St-Gabriel Range	G. Bélanger.....	St-Sauveur des M....	.....	1	
River du Nord.....	Honoré Clavel.....	St-Jérôme.....	.....	1	
River à Gagnon.....	J. H. Clavel.....	“ .....	.....	1	
Cordon St-Jérôme.....	Henri Forget.....	“ .....	.....	1	
Ste-Thérèse Village	Pasteurized Milk Co., G. Jubenville & Co.....	377, Lagauchetière, M	1	.....

TWO MOUNTAINS

St-Canut Village.....	Joseph Cyr.....	St-Canut.....	1	.....
Ste-Scholastique Village	J. N. Dumoulin.....	Ste-Scholastique .....	.....		1
do North of Belle Rivière...	Procul Rochon.....	“ .....	.....	1	
do Côte des Anges.....	Manufacturing Company....	.....	.....	1	

TWO-MOUNTAINS.—Continued.

MUNICIPALITIES	PROPRIETORS	POST OFFICE ADDRESSES	B.	C.	Com.
St. Scholastique Belle Rivière	Alf. Carrière & Co.....	Ste-Scholastique			1
do " " "	Marion & Cie.....	"		1	
do Côte St-Louis.....	H. Cyr	Mirabelle.....	1		
do " "	Manufacturing Company...	Ste-Scholastique		1	
St-Benoît Village.....	Samuel Fauteux.....	St-Benoit.....	1		
do Côte Rouge	Robert Roy.....	St-Hermas.....	1		
do Côte St Jean	Jos. Cyr.....	"	1		
St-Hermas R. St-Hyacinthe..	Robert Roy.....	"		1	
Ste-Scholastique R. St-Is....	Hyacinthe Cyr.....	Ste-Scholastique	1		
St-Hermas Côte St-Pierre....	Alcide Lalonde	St-Placide....		1	
" " "	Honoré Pagé.....	St-Hermas			1
St-Placide Village.....	Alp. Dubreuil.....	St-Placide.....			1
do St-Vincent Rge.....	"	"			1
L'Anse-Annonciative Rge....	William Lalonde.....	Oka.....	1		
N.-D. du Lac "	R.R. P.P. Trappistes.....	"	1		
St-Jos. Pointe à Calumet....	Cyrille Grutard.....	St-Joseph.....	1		

BERTHIER

St-Damien, 11th Range..	Gravel & Sylvestre	St-Damien		1	
St-Michel des Saints, Village.	Siméon Boucher	St-Michel des Saints..	1	1	
" Lachute Rge. St-Jos	J. L. A. Ménard.....	"		1	
" Rge. de la Rivière..	"	"		1	
St-Zénon.....	Jos. Charrette	St-Zénon.....		1	
St-Gabriel, 6th Range.....	Rosario Gervais.....	St-Gabriel.....		1	

BERTHIER.—Continued.

MUNICIPALITIES.	PROPRIETORS.	POST OFFICE ADDRESSES	B.	C	Com.
St-Jos. de Lanoraie.....	Urgel Ecuyer.....	Lanoraie.....	1		.....
St-Ignace.....	André Hamel.....	St-Ignace.....	1		.....
Ile Dupads.....	Thomas Sylvestre.....	Ile Dupads.....	1		1
St-Cuthbert, Chicot Rge.....	Arsène Mailler	St-Cuthbert.....			1
“ St-John Rge....	Jos. Lacourse.....,	“	1		.....
St-Gab. de Brandon Village..	Auguste Champagne.....	St-Gabriel.....	1		.....
St-Barthélemy, York.....	Côté, Lafontaine & Co.....	St-Barthélemy....			1
St-Gabriel Cordon.....	Yacinthe Desjardins.....	St-Gabriel.....	1		.....
“ St-Pierre Range...	J. N. Rocheleau	“	1		.....
St-Edmond, Village.....	Damase Raymond.....	St-Edmond	1		.....
“ Fork Rge.	Olivier Turcotte.....	“	1		.....
St-Damien, Village.....	Gravel et Sylvestre	St-Damien.....	1		.....
“ 8th Range.....	Hon. Doufilet.....	“	1		.....
“ 9th Range.....	T. Camille Mondor.....	“			1
“ 8th Range.....	“	“			1
Ile Dupads.....	Manufacturing Company....	Ile Dupads.....	1		.....

JACQUES-CARTIER

Ste-Anne de Bellevue.....	H. Schetagne	97 St-Jacq., Montreal.	1		
Montreal, 377 Lagauchetière	Pasteurized Milk Co.....	377 Lagauch.. “	1		
Ste-Geneviève	Legault & Legault.. ..	Saraguay Ville	1		
Ste-Geneviève Village.....	J. H. Théoret	Ste-Geneviève.	1		
Côte St-Charles.....	Ambroise Pilon	“	1		
Ile Bizard	Senécal & Théoret.....	Ile Bizard.....	1		

ARGENTEUIL

MUNICIPALITIES.	PROPRIETORS.	POST OFFICE ADDRESSES	B.	C.	Com.
Christieville	Arthur Dawes.....	Christieville .....	.....	1	
Lachute, Genoa.....	Robert Roy.....	St-Hermas.....	.....	1	
St-Andrew's, La Baie.....	Antoine Daoust.....	St-Benoit .....	.....	1	

REPORT OF INSPECTOR G. DESROCHERS

TO THE HONORABLE F. G. M. DECHENE,

Commissioner of Agriculture.

Sir,

I have the honor to submit my second annual report as inspector of creameries, for your department.

This year, I began my visits on the 15th. May and ended them on the 24th. November.

I made 157 visits to 105 factories.

In my report of last year, I made several remarks which I am compelled to repeat, namely, that I note more and more the enormous good resulting from the direct action taken by the Government as regards butter-making.

For instance, I have remarked greater emulation between the manufacturers and a manifest desire on their part to post themselves in regard to the improvements in implements and in the handling of butter before putting it on the market. The manufacturers are more encouraged to produce a better article. To do this, they strive to neglect no detail. They are less afraid to ask advice and to discuss with the inspector the different subjects relating to butter-making. All this shows progress and leads to the hope that in a few years, with good will and perseverance both on the part of the manufacturers and that of the inspectors, we shall have nothing to envy other countries with respect to the manufacture of this product which is calculated to increase the wealth of our farmers.

In noting these good dispositions, I cannot refrain from again insisting upon the importance of establishing competitions and awarding prizes on the spot. It is quite natural to believe that this system would increase emulation. The establishments to which rewards or simple honorable mention were granted would dispose of their products, if not at a higher price, at least with more facility and, with ambition catching from one to the other, the general standard would be very soon raised.

However, to this system, there are pretty grave objections which deserve to be discussed. In the first place, competition. The factories would multiply in a way that would be alarming, if there were no means of remedying the evil. To obtain more custom, the milk in certain places is accepted just as it comes without regard either to its cleanliness or its quality. The result is that the people, who are disposed to do well and to progress, find themselves forced to go with the current and to do like the others, at the risk of manufacturing an inferior product. This steeple chase may have the worst effects on the general result. If the farmers were convinced that, upon the cleanliness of the milk which they bring to the factory, depends the price they will receive, they would be more prudent and more circumspect.

This is a point which the patrons must be made to well understand. Without cleanliness, no good butter. They may turn and return the question, but they will never reach any other result, and, to thoroughly impress them with the importance of this subject, I think it would be more useful to have lecturers, who would explain as clearly as possible to our rural population that it is to their interest to help the manufacturer, within the scope of their powers, to make first quality butter, by taking the necessary precautions to always bring to the creamery milk that is clean and in good condition:

The inspector gives these instructions, of course, when he makes his visits, but there is unfortunately not a large enough number of the patrons who listen to us in order that our advice may have the desired effect.

These lectures should be given in the course of the winter or rather towards the spring, about the time the factories begin to work, in order that the lessons may still be fresh in the minds of all and that they may be put into practice.

The whole respectfully submitted,

St. Nicholas, 15th December, 1900.

GAB. DERROCHERS.

LIST OF CREAMERIES VISITED BY GABRIEL DESROCHERS

COUNTY OF PORTNEUF

VISITS	MUNICIPALITIES	PROPRIETORS	POST OFFICE ADDRESSES.
1	St-Augustin de Desmaures....	East & Co	St-Augustin.
1	Pointe-aux-Trembles	G. A. Larue, M. D.....	Pointe-aux-Trembles.
2	St-Raymond.....	Frs. Faveur.....	St-Raymond.
2	"	Ant. Génois.....	"
1	St-Léonard.....	A. Diamand.....	St-Léonard.
1	St-Bazile.....	Pepin & Pelchat.....	St-Bazile
1	Portneuf.....	F. Bédard & Co.....	Portneuf station

COUNTY OF QUEBEC

1	Beauport	James Geggie ...	Beauport.
1	St-Ambroise.....	H. O'Sullivan	Jeune Lorette.

COUNTY OF MONTMORENCY

1	L'Ange-Gardien.....	J. Lortie	L'Ange-Gardien.
2	Château Richer	Butter Manufacturing Co.....	Château Richer.
2	Ste-Anne de Beaupré.....	Elzéar Fortier.....	Ste-Anne de Beaupré.
1	St-Tite des Caps.....	L. LeBlanc.	St-Tite des Caps.
1	St-Jean, I. O.	Butter Manufacturing Co.....	St-John, I. O.
1	St-François, I. O.....	"	St-François, I. O.
1	Ste-Famille, I. O.....	"	Ste-Famille.
1	St-Laurent, I. O.....	S. Gagnon	St-Sauveur, Québec.
1	St-Pierre, I. O.....	"	"
1	"	Butter Manufacturing Co.....	St-Pierre, I. O.

COUNTY OF LEVIS.

	MUNICIPALITIES	PROPRIETORS	POST OFFICE ADDRESSES.
2	St-Nicholas.....	B. de Villers.....	St-Nicholas.

COUNTY OF BELLECHASSE

2	St-Michel.....	J. Gagnon.....	St-Michel.
2	St-Valier.....	A. Corriveau.....	St-Valier Station.
1	“	P. Latulippe.....	“
2	“	Butter Manufacturing Co.....	St-Valier.
2	St-Raphaël.....	P. Gauthier.....	St-Raphaël-East.
1	St-Nérée.....	F. Breton.....	St-Nérée.
1	“	J. Goulet.....	St-Lazare.
1	St-Philémon.....	Butter Manufacturing Co.....	St-Philémon.
1	Roux, Bellechasse & Daaquam.	“ “	St-Magloire.
1	N.-D. Auxil. de Buckland.....	“ “	Buckland.
1	“	P. Fortier & Cie ...	“
1	“	Butter Manufacturing Co.....	“
1	St-Damien Buckland.....	“ “	St-Damien.
1	“	J. Goulet.....	St-Lazare.
1	St-Lazare.....	J. Goulet.....	“
1	St-Gervais.....	Butter Manufacturing Co.....	St-Gervais.
1	“	Dr P. H. Tanguay.....	“
1	“	P. Fortier	“
2	“	Butter Manufacturing Co.....	“
1	St-Charles.....	O. Mercier.....	St-Charles.

COUNTY OF MONTMAGNY

	MUNICIPALITIES	PROPRIETORS	POST OFFICE ADDRESSES
2	St-François Riv. du Sud.....	L. P. Lecomte.....	St-François, Montmagny.
2	“ “	Butter Manufacturing Co.....	Morigeau.
1	Berthier (below).....	Boucher & Mercier	Berthier (below).
2	St-Pierre Riv. du Sud.....	Z- Cloutier.....	St-Pierre, Montmagny.
	“ “	Elz. Blais	Delagrave P. O.
2	Montmagny	Geo. Fournier & Co.....	Montmagny.
3	“	L. E. Côté	“
1	Cap St-Ignace.....	Ed. Bélanger.....	Cap St-Ignace.
2	“	Butter Manufacturing Co.	“

COUNTY OF L'ISLET

2	L'Islet.....	E. Ménard.....	L'Anse à Gilles.
1	“	L. A. Boucher.....	L'Islet.
1	“	A. Godreau & Co	Trois-Saumons.
1	“	Ménard & Lecomte.....	L'Islet Station.
1	St-Eugène	Butter Manufacturing Co.....	St-Eugène.
1	St-Cyrille	“ “ “ No 1.	St-Cyrille.
1	“	“ “ “ No 2.	“
2	St-Roch des Aulnets.....	“ “ “	Elgin Road.
2	“ “	A. Pelletier	Village des Aulnets.
2	St-Jean Port-Joli	E. Vaillancourt.....	St-Jean Port-Joli.
1	“ “	G. Jean	“
2	St-Aubert	Butter Manufacturing Co.	St-Aubert.
2	Ste-Louise	A. Colin	Ste-Louise.

COUNTY OF KAMOURASKA.

	MUNICIPALITIES	PROPRIETORS	POST OFFICE ADDRESSES
1	Ste-Anne de la Pocatière.....	Ste-Anne's Collège.....	Ste-Anne de la Pocatière
1	N.-D. de la R. Ouelle.....	B. and C. Manufacturing Co...	Riv. Ouelle
2	St-Philippe de Néry.....	Langlais & Chamberlan.....	St-Philippe de Néry
1	St-Paschal.....	C. A. Duval.....	St-Paschal
1	".....	A. N. Labrie.....	"

COUNTY OF TÉMISCOUATA.

1	St-Louis du Ha! Ha!.....	Butter Manufacturing Co.....	St-Louis du Ha! Ha!
2	N.-D. du Lac.....	".....	N.-D. du Lac.
1	St-Modeste.....	C. Godbout & Co.....	St-Modeste.
1	St-Antonin.....	P. April & Co.....	St-Antonin.
2	Fraserville.....	Viel & Thibault.....	R. du Loup Station.
2	Cacouna.....	E. Dicnaire.....	St-Epiphanie (Viger).
2	St-Arsène.....	J. A. Saindon.....	St-Arsène.
2	St-Epiphanie.....	A. Breton & Co.....	St-Epiphanie (Viger).
2	".....	Butter Manufacturing Co.....	"
1	St-Hubert.....	".....	St-Hubert.
1	St-Cyprien.....	".....	St-Cyprien.
1	St-Clément.....	G. April & Co.....	St-Clément.
1	Bégon.....	F. Anctil.....	St-Jean de Dieu.
1	St-Paul de la Croix.....	Ths. Beaubien.....	St-Paul de la Croix
2	Isle-Verte.....	Dicnaire & Co.....	Isle-Verte.
2	".....	Préfontaine & Frère.....	"
1	St-Eloi.....	Godbout & April.....	St-Eloi.
2	Trois-Pistoles.....	J. O. Massé.....	Trois-Pistoles.
2	".....	".....	"

COUNTY OF RIMOUSKI

	MUNICIPALITIES	PROPRIETORS	POST OFFICE ADDRESSES
2	St-Simon de la Baie Ha! Ha!	A. Nicol.....	St-Simon.
2	St-Mathieu de Rioux.....	A. Belzil & Co.	St-Mathieu.
2	St-Fabien Baie des Ha! Ha!...	Butter Manufacturing Co.....	St-Fabien.
1	Sacré-Cœur.....	J. E. Bélanger.....	Sacré-Cœur.
2	St-Germain de Rimouski.....	E. Côté.....	Rimouski.
2	Ste-Blandine	Revd. M. Perron.....	Ste-Blandine.

COUNTY OF MATANE

2	Ste-Flavie	J. Chouinard & Co.....	Ste-Flavie
2	St-Ulric de Matane.....	N. Rioux.....	Québec.
2	"	Butter Manufacturing Co.....	St-Ulric.
1	St-Luc de Matane.....	E. Gauthier & Frère.....	St-Luc.
1	"	Butter Manufacturing Co.....	"
2	Matane	A. Harrison.....	Petit Matane.
2	"	A. Thibault.....	"
2	"	H. Gagnon.....	Ste-Félicité.
2	Ste-Félicité.....	H. Gagnon.....	
2	McNider.....	C. Chouinard.....	McNider.
2	Dalibaire and Romieu.....	E. Verreau.....	Petit Méchins.

COUNTY OF GASPE

2	Ste-Anne des Monts.....	F. Lepage.....	Ste-Anne des Monts.
2	St-Norbert du Cap Chat.....	J. G. Roy	Cap. Chat.
2	"	E. Côté.....	

REPORT OF J. L. PAINCHAUD

TO THE HONORABLE F. G. M. DÉCHÈNE,
Commissioner of Agriculture,
Quebec.

Sir,

I have the honor to submit my first report as inspector of butter and cheese factories for the province.

I began my tour of inspection on the 14th. May last and completed it on the 17th November instant.

Your department had assigned to me as my field of inspection the counties of Beauce and Dorchester, and, though I had already spent over a month in travelling outside of my district, to inspect cheese curing rooms here and there, I still managed to visit all the unsyndicated factories of those two counties, with the exception of a few in the upper part of the county of Dorchester. I visited in all 186 factories, 150 of cheese, 18 of butter and 18 of both combined. Cheese only was made in the latter this year.

My inspection district has the reputation of not being the most advanced portion of the province in the dairy industry and this in every aspect. This reputation, I confess, is a little merited by the counties of Beauce and Dorchester, but especially by Beauce. In the first place, the farmers winter their cows badly, their principal feed still being straw. In summer they have no grass and they are afraid to grow any by sowing seed. Then the milk is badly cared for. The cows are handled in a dirty way. Very frequently the milk is not strained and especially not aired. Further, the utensils such as cans, dishes, &c., are badly cleaned and, as a complement to these shortcomings of the patrons, the factories are firstly too numerous and then they are badly constructed; most of them being located in hollows, generally without drainage, so that all the water used in washing, for the little that is employed in that way, remains there and stagnates around or under the factories.

In addition, a great number of the manufacturers are not sufficiently conversant with their business, many of them setting themselves at the head of factories after a few weeks' apprenticeship. And if that apprenticeship were served under a competent manufacturer; but unfortunately it is often the contrary.

I have frequently observed—and this a little all over—that many of our manufacturers are not sufficiently educated. How many of them know no more than how to read, write and count poorly and these are the ones, invariably, who consider themselves learned !

I have rarely enough met a poor manufacturer among the young men with a little education, as they like generally to gain information and understand the necessity of study in order to keep pace with progress.

If we could gradually, in a certain number of years, reach the point when only manufacturers holding diplomas of capacity would have the right to manufacture, I believe that a great stride would be made in the path of progress.

What I think would be also excellent from the standpoint of progress, especially in my district, would be good lecturers to teach in each parish all that relates to the production and care of milk and, above all, the latter. This subject has heretofore been treated in a way that is too general and not practical enough ; it has been skimmed over, so to speak. More practical details would do good.

One of the most powerful factors towards the improvement of our dairy industry and the quality of our products would be a proper understanding between buyers. If our cheese and butter were always paid for according to quality, how quickly would progress set in and how many dirty little factories would be compelled to close ! But, unfortunately, there is no such understanding ; competition is greater than ever to see who will buy, for, good or bad, there is hardly any difference in price, the only result being that the good pays for the bad.

During the season just closed, it was a regular steeple-chase in my district. To cite one fact in among many others. The representative of a certain Montreal house paid one day for three lots of third quality cheese $\frac{1}{4}$ of a cent more than the top price of the market and this solely from ambition to do business.

But, let us leave trade to itself ; to my mind, it cannot be controlled. It is for us to improve ourselves as quickly as possible.

I will mention another defect or rather a hardship which exists to some extent in certain parts of the province, but especially in Beauce and its neighborhood. I refer to the advice given by certain buyers to the cheese and butter makers in order to lead them to correct the defects which they find or pretend to find in their butter or cheese. Buyers know whether a cheese is of good quality or not, but between this and telling a manufacturer that his cheese has such or such a defect and that he must do such or such a thing to correct it, there is a wide margin. With a few exceptions, the buyers do not understand cheese-making and are thereby rendered incapable, in most cases, of teaching the remedy applicable to the defects which they signalize, the result being that very often they teach them what is false and even absurd. This advice, given right and left, frequently only to show off pretended knowledge or for any other object, does harm to the manufacturers by leading them to commit greater faults. Further it, is an obstacle to the teachings of the inspectors, who find themselves contradicted by buyers who know nothing on the subject. We have unfortunately such plagues in Beauce. I deprived them of a good deal of their prestige during the past season of manufacture, but they have still too much of it. In the dairy industry as in every thing else, if every one minded his own business, it would be much better.

In fine, there is much to be done yet to improve our dairy industry and especially so in my district. But I am happy to state that people are beginning to manifest good will and generally to understand that progress is necessary. By all I was very well received in the course of my inspection; the majority were even desirous to see me again. During the season, I received a good many letters asking for information or inviting me to go and extricate some one from difficulty. At last, the value of an official inspector, when advantage is taken of his visits, seems to be appreciated. A manufacturer thanked me on one occasion for a day spent with him, telling me that I had saved both his reputation and his salary. This young man, who is at the head of a creamery and a good butter-maker, had made cheese some years ago, but was no longer up to the business. Being forced by the wish of his patrons to give up butter for cheese-making, he went to work to the best of his knowledge. I found him, three or four days after he had begun to manufacture, making a cheese for which he could only

get half the market price. I returned to see him a few days later when I found him doing well, and he continued to do so throughout the remainder of the season, his cheese commanding the market price.

There is yet but one cheese-curing room built according to the Government's plans. But there is an awakening in this respect and several are talking of building. It is to be hoped that the effect of this hereafter will be to reduce the number of small factories.

The whole respectfully submitted,

J. L. PAINCHAUD,

Inspector.

Ste. Marie, 22nd, November, 1900.

LIST OF BUTTER AND CHEESE FACTORIES VISITED.

COUNTY OF BEAUCE

MUNICIPALITIES	PROPRIETORS	POST OFFICE ADDRESSES
Ste-Marie	Havard & Grégoire...Cheese...	Ste-Marie.
"	Marcoux & Jolicœur.....	"
"	"	"
"	Louis Marcoux & Co.....	"
"	Onésime Turmel.....	"
"	Donias Dulac.....Butter...	"
"	Vital Cliche .....Cheese...	St-Joseph.
St-Basile	Ap. Drouin.....	St-Basile.
"	"	"
"	" & Co.....	"

BEAUCE.—*Continued.*

MUNICIPALITIES	PROPRIETORS	POST OFFICE ADDRESSES
St-Elzéar	Siméon Maheux.....	St-Elzéar
“	Richard Lessard.....	“
St-Sévérin.....	Butter Manufacturing Co	St-Sévérin.
“	Thomas Roy	Sacré-Cœur Jésus.
St-Frédéric	Dame F. X. Plante.....	St-Frédéric.
“	Hilaire Gilbert.....	“
“	Norbert Plante.....	“
“	Napoléon Vachon.....	“
“	Richard Giguère.....	“
“	Alphonse Perron.....	“
“	Joseph Jacques.....	“
“	Thomas Gravel.....	“
“	Nazaire Drouin	“
“	Ephrem Lagueux.....	“
Sts-Anges	Henri Giguère.....	Sts-Anges.
“	Gédéon Labbé.....	“
“	Ferdinand Mercier.....	“
St-Joseph.....	Butter and Cheese Manuf. Co.	St-Joseph.
“	Thomas Doyon & Co...Cheese	“
“	Gédéon Cloutier & Co.	“
“	Ephrem Tardif.....	“
“ Assomption	Clotaire Lessard	“
“ “	Fortin Doyon & Co.....	“
“ Petite Montagne.....	Ernest Lessard.....	“
“ Grande Montagne...	Evariste Poulin.....	“

BEAUCE.—*Continued.*

MUNICIPALITIES	PROPRIETORS	POST OFFICE ADDRESSES
St-Joseph, 1st range	Noël Roy.....B. and C.	St-Joseph
“ 1st range.....	Vital Cliche.....B. and C.	“
St-François Village.....	Adelbert Goudreau..... C.	St-François.
“ Ste-Marie range...	Cheese Manufacturing Co.....	“
“ Ste-Marie range...	Napoléon Cloutier..... C.	“
“ St-Etienne “ ..	Jean Veilleux..... “	“
“ St-Alexandre “ ..	Cheese Manufacturing Co.....	“
“ St-Joseph “ ..	Chs. Denis & Pepin..... C.	“
“ Riv. Gilbert.....	Cheese Manufacturing Co.....	“
“ The Mines.....	“ “	“
“ Fraser range..	“ “	“
“ St-Charles range...	Cie Loubier..... C.	“
“ St-Joseph “ ..	Cheese Manufacturing Co.....	“
“ St-Louis “ ..	“ “	“
“ Rocher-West.....	“ “	“
“ “ East	“ “	“
“ 1st range.....	“ “	“
“ 1st range.....	“ “	“
St-Zacharie Lake Abénaquis...	Isidore Giguère..... C.	St-Zacharie.
“ 7th range	J. Ernest Demers..... “	St-Nicholas, Lotbinière.
“ Village	Cheese Manufacturing Co.....	St-Zacharie.
St-George, village.....	Adalbert Loubier..... C.	St-George.
“ Rocher.....	Alfred Poulin	“
“ 1st range.....	David Poulin..... “	“
“ St-Antoine range....	Cheese Manufacturing Co....	“

BEAUCE.—Continued.

MUNICIPALITIES	PROPRIETORS	POST OFFICE ADDRESSES
St-George, St-Antoine range...	J. E. Catellier.....	C. St-George
“ Jersey Mills.....	Olivier Caron	“ “
“ St-Jean range.....	Absolon Poulin	“ “
“ Gaslin Road.....	Vinceslas Talbot.....	“ “
“ Ste-Marguerite r....	Benoni Poulin.....	“ “
“ Ste-Anne range.....	Arthur Bolduc.....	“ “
“ St-Pierre range	Elzéar Maheux.....	“ “
“ range	Joseph Busques & Cie	“ “
St-Benoit, 9th range.....	Joseph Vallée.....	“ St-Benoit.
“ village.....	Noël Poulin.....	B. and C. “
“ St-Henri Range.....	Joseph Poulin.....	C. “
St-Martin, village.....	Cheese Manufacturing Co....	St-Martin.
“ 1st range.....	Philippe Garneau.....	C. “
“ “ “	Napoléon Pepin.....	“ St-François.
“ “ “	Jos. Emile Pelletier.....	“ St-Martin
St-Gédéon, village	B. Tanguay..	“ St-Gédéon.
St-Théophile “	Alfred Côté.....	“ St-Théophile.
“ Grand chemin.....	Pierre Roberge.....	“ St-George.
St-Côme, village.....	“ “	“ “
“	“ “	“ “
“	Siméon Rodrigue.....	“ St-Côme.
St-Ludger, Village.....	Jos. O. Nadeau.....	“ St-Ludger.
“	Alphonse Taschereau.....	“ “
St-Charles, Spaulding, village..	Jos. Nap. Lemieux & Co....	“ Spaulding.
St-Agnès “ ..	Nap. Lapointe & Co.....	“ St-Agnès.

BEAUCE.—*Continued.*

MUNICIPALITIES	PROPRIETORS	POST OFFICE ADDRESSES
St-Samuel, 1st range.....	Gilbert Dallaire.....	C. St-Samuel.
“ Grand chemin.....	“ “	B. “
“	Jos. E. Dion	C. “
St-Sébastien, 3rd range.....	“ “	“ St-Sébastien.
“ 1st “	“ “	“ “
“ 2nd “	Cheese Manufacturing Co.....	“
“ village.	Théodule Beaudoin.....	C St-Henri de Lévis.
Lambton “	Eugène Roberge.....	B. Lambton.
“ 4th range.....	Olivier Poulin	“ “
“ 6th “	Gédéon Plante.....	C. “
“ 8th “	Cheese Manufacturing Co.....	“
“ Grand chemin.....	Alphonse Bilodeau.....	C. “
St-Evariste “	Cie de fabrication.....	“ St-Evariste.
“ village.	Jos. Lachance.....	“ “
“ 6th range.....	Louis Bernier	“ “
“	Cheese Manufacturing Co	“
Shenly, Grande Ligne.....	Jos. O. Nadeau & Co. B. and C.	Shenly.
“ “	Louis Fortier & Cie..	“ “
“ “	Théophile Dubé & Cie.....	B. “
“ 6th range	Gédéon Doyon	C. “
“ village.....	Jos. Boutin & Cie....	B. and C. “
“ 9th range.....	Gédéon Doyon.....	“ “
“ “ “	J. E. Demers.....	“ St-Nicolas, Lotbinière.
Dorset.....	B. and C. Manufacturing Co...	Dorset.
St-Méthot, Adstock, Village...	Pierre Rancourt B. and Chee.	Adstock.

BEAUCE.—Continued.

MUNICIPALITIES	PROPRIETORS	POST OFFICE ADDRESSES
St-Méthot, Adstock, 14th range	Cheese Manufacturing Co..	C. Adstock
“ “ 16th “	Joseph Bureau.....	“ “
St-Ephrem, 9th range.....	Augustin Doyon.....	“ St-Ephrem.
“ 8th “	Octave Roy.....	B. and C. “
“ 9th “	N. Pomerleau & Co.....	C. “
“ 10th “	George Bilodeau.....	“ “
St-Ephrem Petit Village.....	Louis Longchamp.....	C. St-Ephrem.
“ village.	Butter Manufacturing Co.....	“
“ Prairies.....	Noël Massé.....	B. “
“ St-J.-Bte range.....	J. G. Plante.....	“ St-Victor.
“ grand chemin.....	Olivier Pouling & Co.....	“ St-Ephrem.
“ Little Shenly.....	Cheese Manufacturing Co.....	“
St-Victor, 3rd range.....	Horace Poulin.....	C St-Victor.
“ Church range.	Cheese Manufacturing Co.	“
“ village.	F. X. Proulx.....	B and C “
“ 1st range.....	Cheese Manufacturing Co.....	“
“ 3rd range.....	Frs. Pepin	C “
“ 4th “	Jos. Rodrigue.....	“ “
“ “ “	Cheese Manufacturing Co	“
“ 5th “	Thomas Roy.....	C Sacré-Cœur de Jésus.
“ 1st “	Bernard Mercier.....	“ St-Victor.
“ Le Bras.	J. G. Plante.....	“ “
Broughton, 9th range.	Abraham Dodier.....	“ Sacré-Cœur de Jésus.
“ village.....	Octave Beaudoin.....	B and C Broughton.
“ 11th range.	Omer Veilleux.....	C “

BEAUCE.—*Continued.*

MUNICIPALITIES	PROPRIETORS	POST OFFICE ADDRESSES
Broughton 8th range.....	Joseph Grégoire.....	C Sacré-Cœur de Jésus.
" 8th "	Dolphis Roy.....	" "
" 8th "	Théophile Beaudoin..B and C	Broughton.
" 6th "	Joseph Vallée.....	C Sacré-Cœur de Jésus.
"	Vital Champagne.....	" "
" 5th range..	Augustin Vachon.	" "
" East Broughton...	Joseph Dodier.....	" "
" 4th range..	Thos. Roy.....	" "
Ste-Hénédine.....	Butter Manufacturing Co.....	Ste-Hénédine.
St-Anselme village.....	Cheese Manufacturing Co.....	St-Anselme.
"	Jos. Baillargeon.....	C "
St-Isidore village.....	Butter Manufacturing Co.....	St-Isidore.
" 4 chemins	"	" "
Ste-Marguerite.....	Jean Faucher.....	C Ste-Marie.
"	F. Doyon.....	" "
" village.....	Napoléon Lamy.....	" "
"	Joseph Maure.....	" "
"	Joseph Chabot.....	" "
St-Bernard.....	L. Z. Béliveau.	" St-Bernard.
" village.....	Butter Manufacturing Co.....	" "
Ste-Claire "	Cheese " No 1	Ste-Claire.
" "	" " No 2	" "
" Caroline.....	Ferdinand Labonté.....	C "
"	J. A. Cayouette.....	" "
" Abenakis.....	Cheese Manufacturing Co.....	" "

BEAUCE.—*Continued.*

MUNICIPALITIES	PROPRIETORS	POST OFFICE ADDRESSES
Ste-Claire Détroit.....	Alphonse Bernier.....	C Ste-Claire
“ 2nd range.....	Alfred Dupont & Co.....	“ “
Frampton grand chemin.....	Wm. Meagher.....	“ St-Edouard, Frampton.
“ 7th range.....	Evangéliste Grégoire.....	“ Frampton.
“ grand chemin.....	Louis Marcoux.....	“ Ste-Marie Beauce.
“	Philippe Grégoire.....	“ Sts Anges “
Cranbourne 3rd range.	Jos. Dumont.....	“ Cranbourne.
“ 4th range... ..	Jos. Cloutier & Frère.....	“ “
St-Benjamin.....	Chs. Villeneuve & Co.....	“ St-Benjamin.
St-Prosper village.	Cheese Manufacturing Co.....	St-Prosper.
“ 4 chemins.....	George Morin.....	C “
“	George Brochu	“ “

COUNTY OF NAPIERVILLE

Napierville village.....	Théophile Fortin.....	B. Napierville.
“	“	“ “
“	“	“ “
Sherrington, village.....	“	“ “
Barrington, “	“	“ “
St-Jacques, “	“	“ “
Napierville, “	Boivin & Co.....	“ “
Sherrington, “	“	“ “
St-Jacques	Cheese Manufacturing Co.....	St-Jacques.

COUNTY OF LAPRAIRIE

MUNICIPALITIES	PROPRIETORS	POST OFFICE ADDRESSES
St-Philippe, Village.....	Théophile Fortin & Co.....	B. St-Philippe.

COUNTY OF ST-JOHN'S

St-Blaise, Village.....	Cheese Manufacturing Co.....	St-Blaise.
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COUNTY OF MONTMAGNY

Crane Island	Cheese Manufacturing Co	Crane Island.
Ile aux Oies	" "	Ile aux Oies.

COUNTY OF MEGANTIC

St-Adrien, Village	Jos. O. Roy	C. St-Adrien, Ireland.
" 10th range.....	"	" "
" 5th "	"	" "

REPORT OF INSPECTOR C. E. STANDISH.

TO THE HON. F. G. M. DÉCHÈNE,

Commissioner of Agriculture,

Sir,

I have the honor to submit my fourth annual report as inspector of cheese factories of the province of Quebec.

I began my tour of inspection on the 13th. May and ended it on the 14th. November.

I made 224 visits to 142 factories. On several occasions, I spent two days in one place when I perceived that the manufacturers did not sufficiently benefit by my explanations at one meeting.

The principal thing that the manufacturers can be reproached with

is employing gassy milk and in marketing their cheese when it is not sufficiently cured. Briefly, the cheese is sent out too green by the proprietors and makers.

What the market needs is a cheese that has reached a good degree of ripeness, that is, firm without being dry. By sending the cheese green, the manufacturers believe that they make more profit because it weighs more, but they forget that they lose on the market their good reputation.

I was in a factory at Somerset, during the last season, and had occasion to observe that the buyers paid $\frac{1}{4}$ of a cent less per lb because the cheese, to the number of 1200 boxes, was green.

The green cheese, which is boxed for exportation, never comes to subsequent maturity. It becomes pasty and sour.

I advised the makers to keep their cheese in good curing rooms for 12 or 15 days.

In some cheese factories, I arrived daily in the morning to test the milk and to take charge of the making of the cheese until placed in the moulds.

I also visited the curing rooms recently constructed and found that they give entire satisfaction. Not only has the cheese a better flavor, but the makers have more emulation and produce more and with greater care.

The best cheese I met in my tour came from these new curing rooms.

I am certain that this improvement is of the highest importance for the country, for not only does it permit of the making of better cheese, but it will help to get rid of the small factories.

Annexed will be found a list of the factories which I visited this season.

The whole respectfully submitted,

C. E. STANDISH,

Inspector.

East Hatley, 20th Nov., 1900.

LIST OF CHEESE FACTORIES VISITED DURING SEASON 1900.

COUNTY OF STANSTEAD

VISITS.	MUNICIPALITIES	PROPRIETORS	POST OFFICE ADDRESSES
2	Kateville.....	Moïse Rainville.....	Kateville.
	Barnston.....	A. Gérin.....	Coaticooke.
2	Dixville, 6th range.....	Geo. Hetu.....	Dixville.
2	Barford, 3rd ".....	P. Tugas.....	"
3	Barnston, 1st ".....	J. D. Morrison.....	East Hatley.
2	Dixville, 4th ".....	Humphry & Childs.....	Dixville.
2	Barnston, 4th ".....	A. Gaudette.....	Norton Mills.
	Magog.....	Nap. Hébert.....	Magog.
	".....	R. E. Scott.....	East-Man.
	Barnston.....	W. Brown.....	Ways Mills.

COUNTY OF COMPTON

3	Barford, 5th range.....	A. Gérin.....	Coaticooke.
3	" Canaan road.....	Louis Dupuis.....	Villette, Hereford.
3	St-Herménégilde.....	J. P. Dupuis.....	St-Herménégilde, Barford
	St-Edwidge, 6th range.....	L. Ladouceur.....	St-Edwidge.
2	" Village.....	L. A. Coran.....	"
	" 10th range.....	S. Rabouin.....	"
3	Hereford, 10th range.....	A. Gérin.....	Coaticooke.
	" 1st ".....	Pierre Chicoine.....	Hereford.
	" 3rd ".....	H. & P. Chicoine.....	East Hereford.
	East Hereford.....	H. Chicoine.....	"

COMPTON - *Continued.*

VISITS.	MUNICIPALITIES	PROPRIETORS	POST OFFICE ADDRESSES
3	Compton, 12th range	A. Gérin	Coaticooke.
2	“ 9th “	“	“
	Clifton, 16th “	“	“
3	“ 4th “	Jos. Vienne.....	Sherrington.
2	East Clifton.....	E. S. Lussier.....	East Clifton.
	St-Malo.....	Jos. Roy.....	St-Malo.
2	“ 5th range..	“	“
	Malvina	Jos. Brault.....	“
	Paquetteville.....	A. Fortin.....	Paquetteville.
2	West Bury.....	Fylar Willard.....	East Angus.
2	East Angus.....	A. Labrie.....	“
	Birchton.....	John Crête.....	Birchton.
	Cookshire Basin.....	Jos. Bergeron.....	Cookshire.
	La Patrie, 2nd range.	S. Gobeil.....	La Patrie.
2	“	Jos. Brillon.....	“
	Notre-Dame de Bois.....	A. R. Dumoullin.....	Notre-Dame des Bois.
	Chesham, 2nd range.....	P. Dumas.....	Chesham.
	“	A. R. Dumoullin.....	Notre-Dame des Bois.
	St-Leon Village.....	J. J. Turcotte.....	St-Leon.
	Piopolis, 3rd range.	Nap. Lemieux.....	Megantic.
	Onbourn.....	Perinait.....	China.
	Lake Megantic.....	O. Poulin.....	St-Ephrem.
2	Bury	Louis Brodeur.....	Bury.
	East Angus.	A. Chainard.....	East Angus.

COUNTY OF SHERBROOKE.

VISITS.	MUNICIPALITIES	PROPRIETORS	POST OFFICE ADDRESSES.
3	Bellevedère.....	E. Salois.....	Sherbrooke.
	Orford, 4th range.....	J. P. Lefebvre.....	Kingsey, French Village.
3	" 2nd "	H. Boise.....	Stukely North.
3	Ascot.....	E. Proulx.....	Ascot.
	Sherbrooke	Camirand & Dupont.....	Sherbrooke.
	Lennoxville.....	Joint Stock Butter factory.....	Lennoxville.

COUNTY OF RICHMOND

3	Stoke, 7th range	Pierre Provancher.....	Stoke Centre.
2	" 6th "	François Dubreuil.....	"

COUNTY OF WOLFE

	Dudswell.....	E. Orr.....	Dudswell.
	" Limeridge.....	R. W. Ralf.....	" Centre.
	Marbleton.....	E. Lize.....	Marbleton.
	Stratford.....	Victor Côté.....	Stratford Centre.
	" 2nd range.....	C. Bourke.....	Lake Aylmer.
	D'Israëli.....	T. E. Adam.....	D'Israëli.

COUNTY OF MEGANTIC

2	Ireland	B. Tanguay.....	Black Lake.
	St-Adrien	J. O. Roy.....	St-Adrien.
	" 9th range.....	Mercier & Bertrand.....	"

MEGANTIC.—*Continued.*

VISTS.	MUNICIPALITIES	PROPRIETORS	POST OFFICE ADDRESSES
2	Ireland, 5th range.....	J. O. Roy	St-Adrien
	“ 5th “	Gilbert & Moss.....	New Ireland.
	St-Adrien, 8th range.....	J. O. Roy	St-Adrien.
3	“ 10th “	“	“
	Halifax	J. F. L. Cox.....	Lysander Falls.
	“ 5th range	Moss & Bergeron.....	Halifax.
	“ 1st “	Thos. A. Bennette	“
	“ 2nd “	Thos. Lavertu.....	“
	“ 2nd “	Alf. Boulanger	“
	“ 3rd “	Paul Martineau.....	“
	Ste-Sophie	Albert Lansell.....	Ste-Sophie.
	Somerset, 11th range	Jos. Simoneau.	Somerset.
	Ste-Sophie, 8th “	C. Gregoire.....	Mailhiot.
	Ireland	J. F. L. Cox.....	Lysander Falls.
	Leeds, 12th range.....	Hutchinson & Davidson.....	Lemesurier.
	“ 15th “	John McDonald.....	West Broughton.
	Broughton, 13th range.....	“	“ “
	Lyster.....	François Mosse.....	Lyster.
	“ 10th range.....	L. Lemay	“
	“ Station	E. Laurent	“ Station.
	Ste-Anastasia	O. Morin.....	Ste-Anastasia.
	Ste-Julie	S. Cloutier.....	Ste-Sophie.
	“ 7th range	Roy & Turcotte.....	Ste-Julie.
	“ 9th “	Geo. Turcotte.....	“
	St-Pierre Baptiste.....	Nap. Provancher.....	St-Pierre Baptiste.

COUNTY OF LABELLE

VISITS	MUNICIPALITIES	PROPRIETORS	POST OFFICE ADDRESSES
4	Thurso	A. Clement	Thurso.
4	" 4th range.....	Rev. Chatelain.....	"
3	"	A. Chène	St-Victor d'Alfred.
3	St-Sixte, 7th range.....	P. Lacoste	Burke's Corner.
3	" 10th "	J. & O. Dent.....	St-Sixte.
3	St-André, St-Louis range.....	Jos. Belisle.....	St-André Evelin.
	" Ste-Julie "	E. Magor	" "
	Ste-Angélique.....	W. H. Robinson.....	Ste-Amédée.
2	Papineauville.....	A. Lalonde.....	Portage de la Nation.
2	"	T. Bonhomme.....	Papineauville.
2	" Presqu'île	Z. Chenier.....	"
	" St-Charles range.....	E. Côté.....	"
3	Ripon, St-Jean-Baptiste.....	Jean Rieux, snr.	St-André Evelin.
	" 3rd range.....	D. Seguin.....	Côte St-Pierre.
2	" 5th "	F. Leduc.....	Ripon.
	" 6th "	D. Beaulieux.....	Montpellier.
2	" Village	Beauchamp Gland	Ripon.
3	" 5th range	D. Lacoste.....	Valeney.
	Montebello, N.-D.-de-Bonsec....	F. Hunault	Montebello.
	" village.....	"	"
	Plaisance	G. Bricault	Plaisance.
2	Thurso, 7th range.....	Rev. Chatelain.....	Thurso.
	Lochaber Bay.....	A. P. McLachlan.....	Lochaber Bay.
	Mason, 2nd range.....	T. Lamarche.....	L'Ange-Gardien.

LABELLE.—*Continued.*

VISITS	MUNICIPALITIES	PROPRIETORS	POST OFFICE ADDRESSES
	Buckingham.....	Jos. Duval.....	Buckingham.
	St-Malachie	Duval & Mongon.....	Mayo Vil Thurso.
	Lochaber.....	Thos. Ross.....	Hawkesbury.
	Buckingham.....	"	"
	L'Ange-Gardien, 4th range.....	H. Lamarche.....	L'Ange-Gardien.
	" 2nd "	T. Lamarche.....	"
	West Templeton, 3rd range ...	Jean-Baptiste Reneau.....	"
	East "	W. A. Muir.....	Ste-Rose de Lima.
	" " 4th range.....	T. Lamarche.....	L'Ange-Gardien.
	Parkinsville, 8th range.....	D. Rollin.....	Parkinsville.
	L'Ange-Gardien.....	D. Meilleur.....	Angers.
2	St-André Evelin.....	M. Cardinal.....	St-André Evelin.
	Heartwell	Jos Jolie	Hartwell.
	St-André Evelin	Jean Rieux, jnr.,.....	St-André Evelin.

COUNTY OF WRIGHT

	Onslow.....	C. McGee	Beech Grove.
2	Bristol, 3rd range.....	A. W. McKechnie	Elmside.
3	" 10th "	James Poole.....	Wabba Ont.
	Clarendon.....	Ed. Hodgins.....	Shawville.
3	" 5th range.....	Robert Smart.....	Stark's Corner.
2	" 8th "	James Armstrong	Shawville.
	Lithfield.....	B. J. Sloan	Vinton.

WRIGHT.—*Continued.*

VISITS.	WRIGHT.— <i>Continued.</i>		
	MUNICIPALITIES	PROPRIETORS	POST OFFICE ADDRESSES.
	Shawville.....	P. M. Labelle.....	Aylmer.
	Bristol.....	"	"
	Quion	"	"
	Brakenridge.....	"	"
	Campbell's Bay.....	"	"
	Masham.....	Aug. Trudel.....	Masham Mills.
	"	W. D. Gibson.....	Rupert.
	Northfield.....	Aug. Trudel... ..	Masham Mills.
	Wakefield.....	G. A. Stevenson.....	Wakefield.

COUNTY OF ARGENTEUIL

	Grenville, 6th range.....	A. Sicotte.....	Pine Hill.
	Chatham, 8th "	"	"
	" 12th "	"	"
	Wentworth, 4th range.....	Fred. Derbyshire.....	Louisia.
	Morin, 1st "	"	"
	"	A. Davis.....	Christinville.
2	Avoca.....	A. F. Arnold.....	Vankleek Hill, Ont.
2	Grenville, 10th range	S. Kelly.....	Avoca.

REPORT OF J. N. ALLARD, INSPECTOR.

TO THE HONORABLE F. G. M. DÉCHÈNE,

Commissioner of Agriculture,

Quebec

Sir,

I have the honor to submit my second annual report as inspector of cheese factories of the province of Quebec.

The counties designated by your department for my inspection are the following: Montmorency, Lévis, Bellechasse, Montmagny, L'Islet, Kamouraska, Témiscouata, Rimouski, Matane and Bonaventure.

I began my inspections on the 15th May and completed them on the 15th November. I made 12 visits to 97 cheese factories, of which 22 received a second and 2 a third visit.

I am to glad to note a marked improvement in the cheese manufactured.

The chief shortcomings are the absolutely defective construction of the factories and the bad quality of the milk supplied by the patrons, as well the whey vats under the factories, which are never cleaned.

I verified a great many thermometers which were 2 to 6 degrees astray.

During my visits, I remarked that the manufacturers showed more eagerness than last year to retain the inspector's services. The factory owners and the makers recognize the efficacy and the utility of the system inaugurated by the Department of Agriculture and the immense advantage they derive from it. At present, the manufacturers are always anxious to receive a visit from the inspector and seem well disposed towards him.

The encouragement which you decided to grant to the cheese factories for the construction of curing rooms, is beginning to produce its effects. I was called upon again to supply information as to the best way to carry out the policy which you advocate.

In the counties designated for my inspection, there is an increase of 21 new factories. In some places, not very numerous, these new establishments might have been avoided, had there been an understanding between the interested parties. Might it not be appropriate to again repeat that it would be wise to encourage, through the press and by means of lecturers, the centralization of factories in the interest of the dairy industry?

I had occasion to visit one cheese factory, where the proprietor would not allow me to inspect his factory or examine his cheese.

In the course of my inspection, it I have had occasion to discover some evident cases of fraud, arising especially from the watering of the milk. In each case, I called the attention of the proprietors or the manufacturers thereto, leaving it to their discretion to resort to the means given them by the law for their protection.

Respectfully submitted,

J. N. ALLARD,

Inspector.

St-Agapit, 21st. November, 1900.

BELLECHASSE

MUNICIPALITIES	PROPRIETORS	POST OFFICE ADDRESSES
St-Raphaël... ..	Morin and Bolduc.....	St-Raphaël.
"	Leger Lemelin.....	"
St-Cajetan d'Armagh.....	Philibert Langlois.....	Armagh.
"	G. B. Dienne & Co.....	"

BELLECHASSE.—*Continued*

MUNICIPALITIES	PROPRIETORS	POST OFFICE ADDRESSES
St-Cajetan d'Armagh.....	Lapierre, Gagnon & Co.....	Armagh.
St-Magloire.....	Séverin Cinq-Mars.....	St-Raphaël.
St-Lazare.....	Chouinard, Labonté & Gagnon.	St-Lazare.
“ 8th range.....	Michel Larochelle.....	St-Germain, Co. Dorchest.
St-Charles.....	Arthur Cantin	St-Charles.
St-Cajetan d'Armagh.....	Cyrille Langlois.....	Armagh.
“	Leclerc & Roy.....	“

BONAVENTURE

St-Bonaventure	Zéphirin Guimond.....	Cap St-Ignace.
Carleton.....	Rev. J. O. Normandin..	Carleton.
St-Charles Caplan ...	Zéphirin Guimond.....	Cap St-Ignace.
New Richmond.....	Rev. Jacob Gagné ...	Maria.
Maria village.....	“	“
St-Alexis Matapédia.....	Denis Richard.....	Avignon.

MONTMAGNY

St-François Montmagny.....	Séverin Cinq-Mars	St-Raphaël.
St-Paul “	Théophile Nicol.....	St-Paul du Buton.
Crane Island.	Charles Roy & Co.....	Crane Island.
“ village.. ..	Narcisse Lachaine ...	“
St-François Montmagny.....	Lucien Marceau & Cie.....	St-François, Montmagny.
St-François, Riv. du Sud.....	Lucien Marceau... ..	St-François.

KAMOURASKA

MUNICIPALITIES	PROPRIETORS	POST OFFICE ADDRESSES
Ste-Anne de la Pocatière.....	Jos. Boucher	Ste-Anne de la Pocatière.
“	Frs. Gendron.....	“
St-Alexandre.....	J. J. Bélanger & Co.....	St-Alexandre.
St-André, 1st range.....	G. S. Dugal.....	St-André.
St-Eleuthère.....	Roy & Plourde.....	Crane Island.
St-Paschal	A. M. Labrie	St-Paschal.
St-André.....	Alfred Harrey	St-André.
“	Desjardins & Marquis	“
St-Alexandre.....	J. J. Bélanger.....	St-Alexandre.
Ste-Hélène.....	Ludger Thiboutôt	Ste-Hélène.
St-Germain.....	Louis Lévêque	St-Germain.
Kamouraska.....	Jos. Michaud.....	Kamouraska.
St-Bruno.....	Célestin Nicole	St-Bruno.
St-Denis.....	Augustin Dionne.....	St-Denis La Bouteillerie.
Mont Carmel.....	Charles Roy.....	Crane Island.

L'ISLET

St-Marcel.....	Rev. F. X. A. Dulac	St-Marcel.
St-Cyrille.....	Gatien Caron.....	St-Cyrille de l'Islet.
Ste-Perpétue.....	Rev. Ed. Martin.....	Garneau.

LEVIS

St-Henri village.....	Adolphe Fortier	St-Henri Village.
“ Trait carré rge.....	Napoléon Kérouac.....	St-Antoine de Tilly.

LEVIS.—*Continued.*

MUNICIPALITIES	PROPRIETORS	POST OFFICE ADDRESSES
St Lambert	Jos. Paquet.....	Blanchet.
St-Nicolas.....	Jos. Lambert	Ross Mills.
“ St John rge.....	Chs. Filteau.....	Fréchette.
St-Jean-Chrysostôme.....	Will. Lambert.....	St-Jean-Chrysostôme.
St-Louis de Pintendre.....	Félix Lambert.....	St-Louis de Pintendre.
St-Henri.....	Zéphirin Talbot.....	St-Henri Village.

RIMOUSKI

St-Damase.....	Thomas Baril.....	Warwick.
MacNider	Jos. Chamberland.....	MacNider.
St-Octave de Métis	Ernest Desrosiers.....	St-Octave de Métis.
St-Damase Village ..	Alf. Chouinard.....	Ste-Angèle.
St-Pierre du Lac de Matapédia	J. B. Antil.....	St-Roch des Aulnaies.
St-Benoit Jos. Labre.....	W. Guimond.....	Ste-Angèle de Mérici.
St-Octave de Métis.....	Paul Thériault.....	St-Octave de Métis.
St-Joseph Lepage.....	Edouard Cloutier	St-Joseph Lepage.
St-Ulric.....	Plante & Castonguay.....	Ste-Angèle.
St-Gabriel.....	Philippe Plante.....	St-Joseph Lepage.
St-Moïse	Chs. St-Amand	St-Moïse.
St-Octave de Métis.....	Alphonse Ross	Ste-Flavie.
Ste-Flavie	Jos. Beaulieu	“
Ste-Angèle de Mérici.....	Arth. Castonguay.....	Ste-Angèle.
“	Alf. Chouinard	“
“	Victor Thibault.....	“

RIMOUSKI (*Continued*)

MUNICIPALITIES	PROPRIETORS	POST OFFICE ADDRESSES
St-Gabriel.....	Victor Thibault.....	St-Angèle.
Ste-Luce.....	Célestin Bélanger.....	Ste-Luce Station.
St-Anaclet.....	Arth. Marmen.....	St-Anaclet.
Ste-Angèle de Mérici.....	Pierre Normand.....	St-Angèle.
Ste-Luce, 2nd range.....	Hormisdas Roy.....	Ste-Luce Station.
St-Donat.....	Jos. Chouinard.....	St-Donat.
St-Joseph Lepage.....	Philippe Plante.....	St-Joseph Lepage.
St-Fabien, 2nd range... ..	Blais & Cloutier.....	St-Fabien.
St-Valérien, 4th range.....	Jos. Thibault.....	St-Valerien.
“ village.. ..	Léon Hudon.....	“
Bic 2nd range.....	Jos. Chenard.....	Bic.
Rimouski 3rd range.....	Henri Dechamplain.....	Rimouski.
St-Anaclet 5th “	Martial St-Pierre.....	St-Anaclet.
Ste-Luce 3rd “	F. X. Gagnon.....	St-Luce Station.
St-Fabien, village.....	Rev. P. Audet	St-Fabien.
Ste-Cécile du Bic.....	Ambroise Voyer.....	Bic.
“	J. B. Lagacé	“
Causapeal.....	Zoël Boudreault	Causapeal.
St-Luce, 2nd range.....	Hermisdas Roy	St-Luce Station.
“ 3rd “	Célestin Belanger.....	“
“ 3rd “	Frs. Gagnon.....	“

MONTMORENCY

MUNICIPALITIES	PROPRIETORS	POST OFFICE ADDRESSES
St-Féréol.....	Jos. Lachaine & Co.....	St-Féréol.

TÉMISCOUATA

Ste-Rose du Dégelé.....	Amédée Fradet.....	Ste-Rose du Dégelé.
St-Louis du Ha! Ha!.....	Jos. Dubé.....	St-Louis du Ha! Ha!
Trois Pistoles.....	D. Basinnotte.....	Cap St-Ignace.
St-Antonin.....	Florentin Soucy.....	Old Lake Road.

SCHOOLS OF COMPARATIVE MEDICINE AND VETERINARY SCIENCE.

SCHOOL OF COMPARATIVE MEDICINE AND VETERINARY SCIENCE OF MONTREAL.

Montreal, 3rd January, 1901.

TO THE HONORABLE COMMISSIONER OF AGRICULTURE,

Quebec.

Sir,

In conformity with the arrangement come to with you, the School of Comparative Medicine and Veterinary Science of Montreal, affiliated to Laval University, has the honor to submit the report of the operations of the first three months.

STATEMENT OF THE WORK.

The courses opened on the 27th September last.

The professors and students were present and all were very punctual during the last three months.

This year nine new students were entered on the matriculation roll, but of this number four follow the courses of human medicine at the same time, so that they do not attend the courses regularly. All the same, however, there is reason to be satisfied with their presence in the school, because students of human medicine have no idea of our studies and there is a general impression among them that anyone whomsoever can become a veterinary surgeon. This is a great mistake, and I can predict that the coming of these young men amongst us will inaugurate a new era for this science, which is so useful in this country and that before long there will be more of our youth who will rightly give the preference to the study of veterinary medicine.

All the courses are given regularly and the students to the number of 13 (4 old and 9 new) display emulation.

There are two courses to which they pay altogether special attention : operative surgery on the living subject and medical clinics on the patient itself.

On the 23rd December last, the written examinations took place and I am happy to inform you that the results were most satisfactory.

I have the honor to be,

Your very humble servant,

V. T. DAUBIGNY,

Director and Secretary.

TO THE HONORABLE COMMISSIONER OF AGRICULTURE.

Quebec.

Sir,

In the beginning of January, 1900, I transmitted to you the statement of the work of the School of Comparative Medicine and Veterinary Science of Montreal for the first three months (end of September to 22nd December 1899) and to-day I have the honor to forward you the report of its operations from the 9th January to the 24th March last, the day of the oral examinations.

During these last three months, the professors and students were very punctual.

The examinations of the close of the year took place, namely : written examinations on the 23rd March and oral on the following day, the 24th.

All the professors assisted at these examinations, together with two special examiners specially invited by you ; these examiners were Messrs

H. C. Pilon, Veterinary Surgeon, of Vaudreuil, and *member of the Council of Agriculture* and A. Descaries, Veterinary Surgeon of St. Martin.

Several candidates presented themselves: one (2nd year) to obtain the diploma of Bachelor in V. M. and the others (3rd year) for that of doctor in V. M. admitting them at the same time to practice and the following are those who obtained these degrees.

BACHELOR IN VETERINARY MEDICINE.

Mr. A. T. Telmosse, of St. André Avelin.

DOCTORS IN VETERINARY MEDICINE.

Messrs A. L'Esperance, of Montreal. (5th year Student)
 E. Gingras, of Levis. (3rd " ")
 E. A. Côté, of L'Avenir. (3rd " ")

The examiners observed with satisfaction the progress of the school in its teaching and congratulated the candidates on their answers to the difficult questions put to them both by them and by the professors.

I wish to here observe that it is better for the province to turn out competent veterinary surgeons than to admit students who would be more or less in a position to apply theory to practice. Good practitioners are needed in practice and surgery.

According to your arrangement with the School, the latter has to supply you with its financial statement for each year.

The detailed account is as follows :

The School received from your department in two instalments the sum of.....	\$2,000 00
With this sum, it paid, namely :	
To the professors	\$1,500 00
To buy horses, 4 of which were for surgical operations on the living animal and 4 for practical anatomy.....	38 00

Paid for advertising the opening of the courses in the Montreal and Quebec newspapers.....	64 00	
Paid to Laval University for the courses of chem- istry and physiology.....	24 00	
Expenses of management, stationery, vignette, pos- tage stamps, &c.....	15 05	
Travelling expenses to Quebec in the interest of the school, reception of the examiners and pro- fessors on examination day, 24th March.....	21 00	
Annuals for the year 1899-1900.....	28 00	\$1,990 05
		<hr/>
Balance to the credit of the school.....		\$ 9 95
		<hr/>

In the name of the School, I thank you for the different articles which you purchased for it in the interest of the teaching especially of bacteriology and I may add that this study, difficult at it is, is attentively followed by the students.

I have the honor to be,

Your very humble servant,

V. T. DAUBIGNY,

Director and Secretary.

Montreal, 15th April, 1900.

**REPORT OF THE FACULTY OF COMPARATIVE MEDICINE AND
VETERINARY SCIENCE, MCGILL UNIVERSITY,
SESSION 1899-1900.**

I beg to report that the 10th Session of the Faculty, being the 34th of the Montreal Veterinary College, commenced in the month of September and continued till the 30th March.

The course of instruction consisted of lectures and demonstrations daily by the following Professors and Associate Professors and Lecturers :

SUBJECT.	PROFESSOR.
Veterinary Medicine and Surgery	D. McEachran, F. R. C. V. S., D. V. S.
“ Anatomy	M. C. Baker, D. V. S.
Cattle Pathology	C. McEachran, D. V. S.
Veterinary Obstetrics and Helminthology	

ASSOCIATE PROFESSORS.

Chemistry	G. P. Girdwood, M. D.
Histology	Geo. Wilkins, M. D.
Botany	D. P. Penhallow, B. Sc.
Physiology	Wesley Mills, M. A., M. D., D. V. S.
Pathology	J. G. Adami, M. A., M. D.

LECTURERS.

Materia Medica	N. Gunn, M. D.
Bacteriology	C. F. Martin, M. D.

List of students who attended the courses and passed the required examinations

VETERINARY MEDICINE AND SURGERY (Third year).

Prof. D. McEACHRAN.

B. F. Humphries,	G. W. Stanbridge,	F. T. Allen,
	W. C. Smith.	

CATTLE PATHOLOGY (Third Year).

Prof. C. McEACHRAN.

B. F. Humphries	F. T. Allen	G. W. Stanbridge.
	W. C. Smith.	

PATHOLOGY (Third Year).

Prof. ADAMI.

B. F. Humphries	W. C. Smith	G. W. Stanbridge.
	F. T. Allen.	

MATERIA MEDICA.

Dr. N. GUNN.

B. F. Humphries	W. C. Smith	G. W. Stanbridge.
	F. T. Allen.	

ANATOMY (Second Year).

Geo. Kennedy	O. Amyrauld	W. Manchester.
	John T. Rork.	

PHYSIOLOGY.

Prof. MILLS.

(Practical).

O. Amyrauld	Geo. Kennedy	John T. Rork.
	D. Tamblyn.	

{ *Written* }.

O. Amyrauld
John T. Rork

Geo. Kennedy
D. Tamblyn.

W. Manchester.

CHEMISTRY.

Prof. GIRDWOOD.

John. T. Rork
O. Amyrauld

D. Tamblyn
W. Manchester.

Geo. Kennedy.

W. C. Smith and F. T. Allen passed Supplemental.

HISTOLOGY, (First year).

Prof. WILKINS.

A. D. Harrington,
L. Doyle

W. H. Spear
W. R. Blair

A. S. Clark
A. R. Douglas.

(Second Year).

O. Amyrauld

Geo. Kennedy

John T. Rork.

BOTANY.

Prof. PENHALLOW.

W. H. Spear

A. R. Douglas.

BIOLOGY.

Prof. MCBRIDE.

A. D. Harrington.

B. F. Humphries and G. W. Stanbridge Supplemental in Physiology.

The Degree D. V. S. was conferred at the convocation held at the Windsor Hall on the 30th April on the following who had complied with the requirements and passed the examinations prescribed to this end :

B. F. Humphries
G. W. Stanbridge

F. T. Allen.
W. C. Smith.

The following in a list of prizes awarded :

Veterinary Medicine and Surgery.....	B. F. Humphries.
Cattle Pathology.....	"
Materia Medica.....	"
Anatomy ..	George Kennedy.
Physiology.....	O. Amyrauld.
Histology.....	A. D. Harrington.
Biology	"

The attendance of the students was good and progress made satisfactory.

It is regrettable that, owing to the introduction of electric motors during recent years, an impression prevailed among the classes from which our students were drawn that horses would decrease in numbers and value, and consequently many young men were led to seek what appeared to them professions offering greater inducements than veterinary science.

The indispensibility of horses has been demonstrated in the recent wars and owing to the greatly increased values of all classes of horses, particularly saddle horses, hunters, park hacks, ladies' horses and race horses of all kinds, carriage horses and in fact horses of every description have reached prices not attained for about twenty years;—cattle too, particularly thoroughbreds of every class, have again reached old time prices; there is every indication that they will go higher; consequently the future of the Veterinary profession is promising and we may reasonably hope for a rapid increase in the numbers of pupils and we trust too a higher standard of elementary education.

The following is a list of the students attending during the current session.

1ST YEAR

J. E. Littlehales, Saltcoats Assa.

H. Gaw, Clinton- Mass.

Joseph Coffey, New-York, N. Y.

G. Halcro, Hudson, P. Q. Bursar of the Province of Quebec.

2ND YEAR

Arthur S. Clark, Hubbardston, Mass.

W. Reid Blair, Chicoppe, Mass.

W. H. Spear, Burlington, Vt

Seymour Hadwen, Duncan, B. C.

A. R. Douglas, Montreal.

L. Doyle, “

A. D. Harrington, Guysboro, N. S.

3RD YEAR.

O. T. Amyrauld, Sweetsburg, P. Q., Bursar of the province of Quebec.

John T. Rork, Roxbury Mass.

Walter Manchester, Sussex, N. B.

D. Tamblyn, Berkshire, England.

G. A. Kennedy, Hemmingford, Q.

A. A. Etienne, Montreal.

In conclusion I beg to report that owing to the small attendance the income from fees is small and the liberal grant of the Provincial Government alone enables us to continue the course as no financial aid has so far been given this College from the University or endowments notwithstanding the well known advantages derived by the Province from our educational work.

I have the honour to be,

Sir,

Your obedient servant,

DUNCAN McEACHRAN,

Dean.

COUNCIL OF ARTS AND MANUFACTURES

ANNUAL REPORT OF THE SECRETARY FOR THE YEAR 1899-1900

TO THE PRESIDENT AND MEMBERS

of the Council of Arts and Manufactures.

Gentlemen,

I have the honour to submit the following report on the operations of the various schools under the control of this Council for the year 1899-1900.

During the year, seven (7) schools were opened in the province in the following places :

SCHOOL	Number of classes	Number of pupils	Average attendance	Number of Teachers
Montreal.....	14	727	450	21
Quebec.....	8	339	124	8
Levis.....	7	212	107	11
Sherbrooke.....	2	63	42	2
Sorel ..	1	39	13	1
Three-Rivers ..	1	28	11	1
St. Hyacinthe.....	2	58	44	3
	35	1466	791	47

The number of pupils as given in the above statement shows a substantial increase of 229 as compared with the previous year and the attendance was quite satisfactory.

It is gratifying to note that the attendance increases yearly. The number of pupils who have followed the classes is the largest since the establishment of schools, in 1872, and in some the space is becoming too limited.

As usual, the pieces of work executed in the schools during the session have been forwarded to Montreal and the opening of the exhibition will take place this evening by a distribution of prizes to the most successful pupils of this school.

The admission to the exhibition is free and it is hoped that it will be visited by many who take an interest in the work pursued by this institution.

These annual exhibitions always have a good effect and it would be desirable that each school should be required to hold one at the end of each term.

It having been decided to send an exhibit from our classes to the World's Fair presently being held in Paris, France, the teachers have made a careful selection of specimens for this exhibit and the collection of work sent, it is expected, will be a credit to the Council. The collection consists of the following.

Freehand Drawing.....	14 pieces
Architecture.....	9 "
Decorative Painting.....	4 "
Lithography	11 "
Modelling.....	3 "
Mechanical Drawing.....	9 "
<hr/>	
50 pieces	

An application has again been made to the Government for a larger grant and the delegation appointed at one of the meetings of the Board

were assured that this demand would be duly considered for the coming year. The Council will then be in a position to fulfil the programme which it has prepared and no doubt the public will benefit by the numerous additions to the present courses.

An application has been received from the municipal authorities of the town of Valleyfield asking the establishment of a school in that locality and stating that the rooms together with the lighting and heating would be furnished free of charge by the Corporation. Before making any decision in this matter it would be advisable to find out if the services of competent teachers could be secured in the town or in the neighborhood inasmuch as the success of the classes generally depends on the qualifications of the teachers.

I would suggest that, with a view of comparing the results of each year's work, a number of the best pieces be framed and retained in the schools ; this would be instructive in many ways. It is pleasing to state that a member residing in Montreal has given over 300 feet of picture mouldings.

The question of establishing day classes should be seriously considered and as requests are received asking that they be opened, I am of opinion that a trial in one or two of the schools should be made next year. One or two classes could be opened and if the attendance does not reach the limit fixed by the local committees they could be closed immediately. I have reason to believe that freehand drawing and modelling classes would be well attended. In Montreal, over 75 applications have been received asking the opening of a freehand drawing class in day time.

It having been decided only on the 11th of this month that the annual meeting would take place on the 23rd, instead of in the last fortnight of June, the time at my disposal was insufficient to prepare as full a report as intended, but the present one will be altered and additions will be made thereto before being handed to the Government.

The visit to several of the schools was made by Mr. F. E. Meloche, a member of the Council, and the Assistant Secretary, and attached is their report.

Some details are herein given in connection with each school.

MONTREAL SCHOOL

This school was opened on the 9th October, 1899, and closed on the 6th April, 1900.

Classes were in operation as follows :

CLASSES	TEACHERS	Number of Pupils	Average attendance
Freehand, Jr.....	E. Dyonnet, J. St-Charles & J. H. Egan.....	88	64
Freehand, Sr.....	E. Dyonnet.....	32	26
Architecture.....	H. J. Peters & G. A. Monette.	46	35
Decorative Painting	J. C. Franchère.....	17	6
Modelling.....	Alexis Carli.....	26	15
Lithography.....	J. A. Harris..	31	18
Mechanical.....	J. T. Gardham.....	66	39
Mechanical. (Pt. St. Charles).....	J. Powell & W. A. Booth.....	31	17
Stair Building.....	L. H. Blouin & J.B. Martineau	18	13
Plumbing.....	J. A. Peard & W. P. Burns....	44	33
Steam Fitting.....	G. A. Peard & W. P. Burns....	25	16
Boot & Shoe.....	C. A. Payfer.....	22	15
Dress Cutting and Dress Making.....	Mme E. Boudet... ..	127	84
Solfeggio.....	J. B. Dubois.....	154	69
		727	450

The total number of pupils shows an increase of 264 as compared with the preceding year. Classes were opened earlier than last season and the increase in the attendance is somewhat due to the distribution of prizes held in June, 1899, at which medals and instructive books were given to the successful pupils.

Changes were made in the teaching staff as follows :—Mr. J. C. Franchère was appointed teacher of the decorative painting class in place of Mr. F. E. Meloche, who had resigned ; Mr. Alex Carli was named teacher of the modelling Class.

On account of the large attendance at the mechanical drawing class, Point St. Charles, Mr. W. A. Booth was elected assistant to Mr. James Powell.

Mrs. E. Boudet was nominated teacher of the dress-cutting and dress-making class in place of Mrs. E. L. Ethier, who had tendered her resignation.

As in the previous year, great care was taken in selecting the teachers, and those appointed by the Committee were competent men and had good attendance in their respective classes.

As mentioned in the report of this school, a new class in steam fitting was established and the number of pupils attending same was satisfactory. The plan of instruction followed was similar to the one at the New York Trade School, which is considered one of the most perfect in existence.

Another class was added to the school and lessons in Solfeggio were given by one of the best professors in the city ; no expenses were incurred by the Council in connection with this course, only the room being provided. This was done after consultation with the Hon. F. G. M. Déchène Commissioner of Agriculture, who gave his approbation to the action of the Committee.

The lease for the class rooms in the Monument National Building, which expired on the 1st January, 1900, was renewed for a term of five years and four months at the rate of \$2,500 per annum.

It is a great satisfaction to report that several citizens and important institutions of Montreal show great appreciation of the importance and value of the work done in the evening classes and they have generously contributed to the distribution of prizes by giving medals and books to the most worthy pupils.

The warmest thanks of the Council are due to those parties for their generous expression of sympathy and it is hoped that their good example will be followed by others in the future. Already offers of prizes for next year have been received from gentlemen who desire to encourage the work being done in our schools. The names of the donors are as follows:

Lieutenant-Governor of the Province, Hon. J. A. Jetté.
 The Archbishop of Montreal.
 Hon. F. G. Marchand, Prime Minister.
 His Worship the Mayor of Montreal, Mr. R. Préfontaine.
 Hon. J. E. Robidoux, Provincial Secretary.
 Lord Strathcona and Mount Royal.
 Hochelaga Bank.
 La Patrie.
 La Presse.
 Chamber of Commerce.
 The Star, The Witness, The Herald and The Gazette.
 St. Jean Baptiste Society.
 Mr. A. V. Roy, C. E.
 Messrs Garant, Terroux & Co.
 Messrs H. R. Ives & Co.
 Hon. L. J. Forget.
 J. Cochrane.
 G. A. Monette.
 Rodolphe Forget.
 Thos. Robertson & Co.
 A. J. Théoret, Manager of Simpson, Hall Miller & Co.
 H. Beaugrand.
 Messrs Hudon, Hébert & Co.
 Mr. E. S. Clouston.
 Mr. R. Wilson-Smith.
 Mr. Chs. Chaput.
 Rodrigue & Frères.
 Paquette & Frères.

The Committee having been splendidly encouraged in its work, decided to make the distribution of prizes a special occasion. The awards will be given this evening in the large hall of the Monument National and as a

large number of invitations has been addressed to the leading manufacturers, prominent citizens and labor organizations throughout the city, it is expected that the public will gladly respond to same by attending this distribution.

The resident members paid frequent visits to the classes during the winter and took great interest in the work of the school.

The work in general is quite satisfactory and shows that the pupils take advantage of the instruction given.

QUEBEC SCHOOL

This school was opened on the 11th October, 1899, and closed on the 6th April, 1900.

The following classes were in operation.

CLASSES	TEACHERS	No. of pupils	Average attendance
Freehand.....	Chs. Huot.....	55	25
Architecture.....	C. E. Gauvin.....	35	11
Modelling.....	Henri Angers.....	16	9
Mechanical.....	Theo. Dorval..	24	12
Stair building.....	E A. Marceau..	22	8
Plumbing.....	Oct. Matte.....	26	10
Boot & Shoe.....	L. A. Perrault.....	30	25
Dress Cutting.....	Mrs Donovan	131	24
		339	124

In making a comparison with the attendance of the previous year, an increase of 96 in the total number of pupils is shown, but the average attendance is not as large.

The opening of the school was the occasion of a public meeting at which the provincial ministers and citizens were present. Interesting addresses were delivered and prizes awarded to the pupils of 1898-99.

Mr. L. A. Perrault took charge of the boot and shoe pattern making class, in place of Mr. Schryburt who had left the city.

The work forwarded to the annual exhibition shows that good results have been obtained.

LEVIS SCHOOL

This school was opened on the 12th October, 1899, and closed on the 14th March, 1900.

The classes were the following :

CLASSES	TEACHERS	Number of pupils	Average attendance
Freehand			
First year.....	P. N. Hamel & L. Guenette...	25	17
Freehand			
Second year.....	" "	44	27
Freehand			
(Sr).....	J. J. Scherrer.....	18	8
Architecture & geo-			
metry	A. H. & J. E. Larochelle.....	30	12
Modelling	J. J. Scherrer	34	17
Mechanical	A. H. & J. E. Larochelle.....	31	13
Lectures.....	" " "	30	13
		212	107

The number of pupils shows a decrease of 67 as compared with last year, but the attendance has been better.

This school was closed earlier than the others on account of the grant being expended, and in order that the classes may be kept in operation for a longer period, a larger amount would be needed for next winter.

The drawings and other pieces of work sent to the exhibition, although not as numerous as in former years, are a credit to the school. I have been informed that the best drawings were returned to the pupils without any order from the Council; I am of opinion that all the work

executed during the session should be retained by the teachers and only returned after the annual exhibition. This rule should apply to all the schools.

The official closing of the classes took place on the 27th March last and a distribution of prizes to the deserving pupils was held. It is a pleasure to state that a great number of the citizens were present and congratulated the pupils on their studies. The mayor of the town, Mr H. E. Dupré was kind enough to offer a very interesting book to the best pupil of the modelling class.

The success of this school is due in a large measure to the resident member, Mr. Damase Lainé, who takes much interest in and pays frequent visits to the classes.

SHERBROOKE SCHOOL.

This school was opened on the 2nd November, 1899, and closed on the 29th March, 1900.

Instruction is given in the following branches :—

Achitecture.....	J. W. Grégoire.....	21 pupils.	Aver.	Attend.	14
Mechanical.....	Robert Wyatt.....	42	"	"	28
		63	"	"	42

The total number of pupils shows an increase of 9 compared with the preceding year and the attendance has been very good.

Efforts were made at the beginning of the season to open a freehand drawing class, but as no competent teacher could be secured, the opening of same was postponed to next year.

The distribution of prizes offered by prominent citizens was the occasion of a large public gathering held on the 3rd April last. Those present were much pleased at seeing that the classes were well attended and the work exhibited was a great credit to the teachers.

Judging from the drawings forwarded to Montreal, it is gratifying to report that this school is on a good footing and deserves encouragement. It is intended to establish, next season, classes in freehand drawing and dress cutting. The resident member, Mr. D. McManamy, who takes considerable pride in the school, visited same on several occasions, and he thinks that the school will be superior next fall to what it has been in former years.

THREE-RIVERS SCHOOL.

This school, which is composed of one class, was opened on the 5th February, 1900, and closed on the 6th April, 1900.

At the beginning of the season, an application was received from the corporation requesting the Council to establish a class in plumbing. The suggestion was approved; but on account of the difficulty of securing the services of a qualified teacher, it was not put in operation.

The freehand drawing class was attended by 28 pupils showing a large decrease compared with last year of 41 and the average attendance was 11.

It is questionable whether this school should be re-opened next fall, if the public do not appreciate the instruction more than in the past. The results obtained are not quite satisfactory.

SOREL SCHOOL.

This school was opened on the 24th October, 1899, and closed on the 5th April 1900.

There are three classes in which instruction is given, namely:—freehand and linear drawing and carpentry, Mr. J. H. Rouleau, being the teacher.

The number of pupils enrolled was 39, showing an increase of 5 on the preceding season and the average attendance was only 13.

From what has been learned, the teacher is doing his utmost in order to have a larger attendance, but the public of the locality do not respond to his demand. As stated in former reports, no interest is taken in the classes and it is questionable whether the Council would be justified in re-opening this school another year unless the prospects are brighter.

ST-HYACINTHE SCHOOL.

On account of the resignation of the member of the Council in this city, the opening of the classes took place only on the 8th January, 1900, after the appointment of Mr. L. Côté as a member in place of the one resigned.

The classes were as follows :

Linear drawing..... Brothers Basilianus & Néry...	44 Pup.	36 Aver Att.
Boot & Shoe.....Magloire Côté.....	14	8
	<hr/> 58	<hr/> 44
	<hr/>	<hr/>

The class in linear drawing was held in the Girouard Academy and the instruction given in boot and shoe pattern making was in the establishment of the well known boot & shoe manufacturers, Messrs M. Côté & Co.

The attendance shows a good increase over last season and it is expected that the classes will be put on a better basis next winter.

The member, Mr. Louis Côté, took an active interest in the opening of the classes and in order to encourage the pupils, he offered to the most successful pupils a magnificent box of instruments.

Annexed is a statement showing the number of pupils, the average attendance and number of lessons given in each school.

The whole respectfully submitted,

S. SYLVESTRE,
Secretary.

STATEMENT SHOWING NUMBER OF PUPILS, AVERAGE
ATTENDANCE AND NUMBER OF LESSONS GIVEN
IN EACH SCHOOL.

SCHOOLS.	No. of Pupils.		Average Attend.		No. of Lessons.	
	99-00	98-99	99-00	98-99	99-00	98-99
Montreal	727	463	450	287	640	509
Quebec.	339	244	124	126	373	278
Levis	212	279	107	126	207	241
Sherbrooke.. ..	63	54	42	29	78	53
Three Rivers	28	69	11	24	26	42
Sorel.....	39	34	13	11	86	60
Saint-Hyacinthe....	58	13	44	9	52	37
	1466	1167	791	612	1462	1211

INQUIRY

REGARDING THE IMPROVEMENT OF CHEESE-MAKING IN THE PROVINCE OF QUEBEC

BY

GABRIEL HENRY, C. E.,
Special Officer in the Department of Agriculture,

AND

E. BOURBEAU,
General Inspector of the Syndicated Cheese Factories of the Province, and Professor of
Cheese-making at the Dairy School of St. Hyacinthe.

Quebec, 30th November, 1900.

HON. F. G. M. DÉCHÈNE,
Commissioner of Agriculture,
Quebec.

Sir,

In consequence of the study made at your request by Mr. Gabriel Henry, of the remarkable report by Mr. F. J. Lloyd on the improvement in the manufacture of Cheddar cheese in England, and the labors of Mr. E. Duclaux, which study was submitted to you on the 30th March last, you instructed us to take the necessary steps to obtain information leading to improvement in the quality of Cheddar cheese in this Province and to proceed to England in order to study the manufacture of true Cheddar on the spot, the needs of the various markets of that country and the defects found by importers in cheese from the Province of Quebec.

Your instructions bound us to follow the programme contained in the conclusion of the study abovementioned. In accordance with this programme, after beginning our experiments at the Dairy School of Saint Hyacinthe, and at l'Ange-Gardien, county of Rouville, in Mr. E. Bourbeau's cheese factory, we sailed for England on the 7th July to continue our experiments and searches there.

Through the kindness of Mr. F. J. Lloyd, the author of the report abovementioned which has chiefly served as a basis for our searches, we were able to fully carry out our programme and to bring back from our trip a very large amount of fresh information of the highest importance.

Our most sincere thanks are certainly due to Mr. Lloyd for his intelligent assistance.

We append the joint report on our mission which you will find below.

We have the honor to be,

Sir,

Your obedient servants,

GABRIEL HENRY,

E. BOURBEAU.

GENERAL OUTLINE

Sir,

Before entering into the details of our experiments, we consider it necessary to at once reproduce a brief study of the searches made by Mr. Duclaux, director of the Pasteur Institute, Paris, and especially by Mr. F. J. Lloyd of London, which study was made under your orders in March last by Mr. G. Henry and served as a basis for these experiments.

As Mr. Lloyd's work specially covered Cheddar cheese, we were chiefly guided by it in our searches.

To properly realize the nature and the object of our mission as well as the difficulties to be overcome in the improvement of our cheese, it is necessary that the result of the labors of these two chemists, that of Mr. Lloyd in particular, be well understood. We therefore begin by reproducing that study although it is somewhat lengthy.

(Readers who wish to know at once the results of the experiments made by Messrs G. Henry and E. Bourbeau will find it at the end of this study).

Quebec, 30th March, 1900.

HON. F. G. M. DÉCHÈNE,

Commissioner of Agriculture,

Quebec.

Sir,

At your request, I have carefully examined Mr. F. J. Lloyd's report on the manufacture of Cheddar cheese.

The experiments mentioned in this report have fully confirmed certain known facts in connection with this manufacture; explained other facts the reason whereof had not yet been determined, and finally made certain things known which were not yet suspected; moreover they give us a glimpse of several important questions which certainly deserve to be seriously examined.

If some of the conclusions of the report cannot be wholly adopted in this Province, where the climate, the breed of cows, the care given them, the milk they yield, etc., are different from what they are in England, I think however that, as Mr. Lloyd's report is the most complete and the most conscientious made in the manufacture of Cheddar cheese, it may render great services to the dairy industry in this Province, and I propose in the following pages to give a summary of all the conclusions that may interest us.

In 1891, the Department of Agriculture, in England, considered that it was necessary to have experiments made in view of improving the processes of manufacture of Cheddar cheese. It applied to the Bath, and West and Southern Counties Society and offered to supply the necessary funds for these experiments. The offer was accepted and Mr. F. J. Lloyd was chosen by the board of directors of the society to carry out the experiments.

In England, where the counties are situated with which we are now dealing and which are the native country, the centre of the manufacture of Cheddar, this cheese is made on the farms ; each farm, as it were, has its cheese factory and its ripening room. The manufacture generally begins in April and ends in November. During that period, the cows remain at pasture. The pastures are nearly always permanent meadows or meadows of long standing that are kept with the greatest care. The cheese is sold, as a rule, only two or three months after being manufactured and even longer.

On each farm there are from 30 to 50 cows, yielding enough milk to make one or two cheeses a day.

The methods of manufacture followed are not the same on all the farms ; nevertheless they may be reduced to three principal ones : the Harding system, which is the oldest, the Candy system and the Cannon system. The latter seems the most modern.

In Scotland, there is still another, called the Scotch system, which is nothing else than the Canadian system imported into England, in 1885, by the Ayrshire Dairy Association and modified in view of the working of small quantities of milk at a time, of the climate and of the nature of English milks.

In England, the nature of the soil, that of the pastures, the breed of cows, the quality of the water which frequently varies from one farm to the other, it necessarily occurs to one's mind that a system that suits certain farms has to be modified on others.

In Canada, the cheese factories work every day considerable quantities of milk coming from different farms and all mixed up together. In a specified district, the manufacturers have therefore to work milk whose average quality varies but little from one factory to another.

In one and the same district, the method followed should therefore be uniform ; but if separate districts were taken, it would apparently be otherwise.

On the lower St. Lawrence, for instance, the climate and the breed of cows are certainly very different from what they are in the Eastern Townships.

Nevertheless, it is very clear from Mr. Lloyd's report that the Cannon system is sufficiently elastic to be adopted for working milks of various kinds: on the condition, however, that sufficient means of control be used, and *I think that with means of control within the reach of manufacturers, simple practical and sure means, a single system might also be adopted with advantage throughout the whole Province of Quebec.* We should thus have a cheese of uniform quality, a most desirable thing for the export trade.

This question of means of control, as will be seen further on, is of the greatest importance: the absence alone of such means and that of a *good theory* in the manufacture of Cheddar has given rise to the many different methods, the result of working with milks of various natures. But if these two desiderata were once supplied, I think that this manufacture would assume a better defined and less empirical character, the whole to the advantage of the dairy industry.

Mr. Lloyd's work is of great importance from this standpoint and in the following pages, while making use at the same time of the searches made by M. E. Duclaux, director of the Pasteur institute in Paris, and of those made by other *savants*, I intend to take therefrom everything that may tend to the realization of these two desiderata.

Mr. Lloyd's investigations bear upon the following points:

1. The influence of the nature of the soil, the water, the fodder, the breed of cows, the seasons, etc., on the quality of the milk and consequently on that of the cheese;
2. The reasons in support of the practices hitherto followed in the manufacture of Cheddar and the means of controlling such manufacture;
3. The nature of the microbes that intervene in the manufacture of these cheeses and in their ripening; their role and accidents in the manufacture.

In order to be able to deduce proper conclusions from the experiments undertaken by him, the first thing to be done was to choose one of the systems of manufacture mentioned above, to adhere to it and take it as a

basis, as a term of comparison. It was necessary to have a manufacturer well versed in this method, knowing all its secrets and decided to put it into practice daily in a regular manner. The manufacturer had to be methodical, conscientious, sufficiently intelligent and educated to be able to account for all the details of his work, to thoroughly understand the nature of the studies made and to devote himself entirely to all the experiments that might be asked of him.

In the previous year, 1890, the Bath and West and Southern Counties Society, of England, had organized an itinerant school for cheese-making. This school was to be transported every year from farm to farm, and Miss M. J. Cannon, the daughter of Mr. Henry Cannon, the author of one of the most renowned systems, had been chosen as teacher. She was entitled in many ways to this distinction and one of her cheeses had won the first prize at an exhibition held at Frome in 1887 and open to competitors from all parts of the world.

This was the school followed by Mr. Lloyd, who consequently adopted the Cannon system.

The farms where the school was to be held in following years were chosen in such manner that Mr. Lloyd was able to investigate the soils and pastures of various kinds.

He accompanied the school during the eight years covered by his experiments. During the last two years, the school remained on the same farm.

The soils of all the farms were carefully analysed. When on one of them he found different soils, each one was analyzed separately. Meteorological observations were taken; the plants in the various meadows were studied by a special botanist. The water drunk by the cows was also analyzed. The milk was carefully measured and analyzed every day as often as was necessary. As to the analysis of the whey, of the curd, they were made daily and at every stage of the manufacture. The cheeses were judged by experts and analyzed.

Bacteriological examinations were also made of the soil, the plants, the milk, the water, the curd, the whey and the cheese.

Nothing was spared to supply a proper basis which could be relied on and Mr. Lloyd's report contains the particulars of all these studies.

SEARCHES IN CONNECTION WITH THE INFLUENCE EXERTED BY THE NATURE
OF THE SOIL, OF THE PLANTS, ETC.

In studying the influence of the nature of the soil, of the grasses, of the water on the quality of the milk, a distinction must be made.

They may influence the quality of the milk either by their chemical composition and their physical condition or by the microbes they contain. The question of microbes will be dealt with separately; for the moment I shall speak only of the chemical and physical composition of these factors.

Influence of the nature of the soil.—As regards the soil, the conclusion drawn from the experiments is as follows:

The chemical composition of the soil and its physical condition have no *direct influence of practical importance* on the quality of the cheese; their influence is only exerted indirectly. In other words every soil, whatever may be its chemical composition, physical condition and geological character, producing an abundant and succulent fodder, is capable of producing milk of the best quality for the manufacture of Cheddar.

The question is, above all, to get crops of good quality, in other words again: two soils of entirely different physical and chemical composition, if they produce abundant fodder *of the same kind* and equally succulent, will produce milks of equal quality. The chemical composition of the fodders *of the same kind* is affected by that of the soil but not sufficiently so to seriously modify the nature of the milk with regard to the making of cheese.

Special experiments were made by Mr. Lloyd to ascertain the influence of the liming of the soils on the quality of the milk, but owing to particular circumstances, these experiments had no certain result. The balance seems to lean in favor of liming.

In 1892, 1893 and 1894, the school was transferred to farms with pastures which had for many years been considered quite unsuitable for production of good cheese. It was found that this inferiority was due not to the nature of the soil and of the grass but to an infection of which I will speak futher on.

In all this, there is no question of any special influence of the nature of the soil on the aroma or flavour of the cheese. This question has not yet been studied sufficiently. But it is more than probable that with two milks of the best quality coming from two soils of different natures, the aroma and flavour of the first quality cheeses obtained may differ.

Influence of the nature of the water.—As regards the water drunk by the cows, leaving aside the question of the germs it may contain, it was ascertained in a sure manner that hard waters, those containing carbonate of lime and sulphate of lime are the best for cows whose milk is to be converted into Cheddar cheese. This remark is important.

Influence of the nature of the grasses.—As regards the nature of the grasses, leaving again aside the question of the microbes, as the experiments were made on pastures containing no weeds so to speak, no sure practical conclusion could be drawn. This question remains an open one.

Influence of the season.—The influence of the season is very marked; in dry years the milk is less abundant and less rich. When the decrease in the quantity of the milk yield is due exclusively to heat and drought, the quality of the milk is greatly affected and the quantity of cheese produced is smaller. In the Province of Quebec, the cows are often sent out on bad pastures without any protection against the heat of the sun; the quantity and quality of their milk must therefore be affected by this.

This was already known, but Mr. Lloyd's experiments fully show the importance of the question which is greater than is generally imagined.

In Canada, atmospheric variations are much more frequent and sudden than in England ; their influence should therefore be much more important here and precautions should be taken by farmers in this respect.

In dry years the herds attain their maximum daily yield more rapidly than in wet years ; the diminution in the quantity of the milk yield is rapidly felt. There are considerable oscillations in this quantity due to atmospheric variations. Thus at Butley, in England, where the school was in 1893, after a period of drought, a light rain that fell on the 11th July, followed by more on the 15th and 19th of the same month, had such an effect on the yield of milk that the average quantity given by a herd of 38 cows increased from 1,300 lbs in the first ten days of the month to 1,430 in the last ten days.

Influence of the choice of cows.—Mr. Lloyd's experiment likewise confirmed the fact that the choice of cows is of the highest importance both as regards the quantity and the quality of the milk. This question has so often been dealt with that it is needless to speak more at length of it here.

Influence of the nature of the food.—With regard of the influence of the nature of the food on the quality of the milk, a question so often discussed, Mr. Lloyd says that it is frequently asserted that the nature of the food has no influence on the composition of the cow's milk. He does not believe in this theory which is diametrically opposed to that of experienced men and to the conclusion drawn from all the searches properly carried out with a view of throwing light on this question. His searches show, on the contrary, that this influence is rather important.

The quantity of the milk yield depends on the excellence of the pastures. Whenever the conditions were favorable to the production of abundant fodder, whether such conditions were local or climateric, an abundant quantity of very good milk was obtained.

Number of cows used in these experiments.—During the eight years that these experiments lasted, the number of cows used was about 412, an average of 52 per farm. The average annual yield of milk of each of these cows for

a milking period of ten months was about 5,000 lbs. We are therefore very far from the existing state of things in this respect in this Province where the average yield of the cows does not exceed 3000 lbs and where a good many cows can still be found giving no more than from 1,500 to 2,000 lbs of milk in a year.

Such are the conclusions to be drawn from the first series of experiments made by Mr. Lloyd. I will now pass on to the second series relating to the production of Cheddar.

PROBABLE THEORY OF THE MANUFACTURE OF CHEDDAR.

(According to the searches made by Messrs F. J. Lloyd and E. Duclaux).

To enable this theory to be better understood, I will compare the two principal systems now followed in England : the Candy system and the Cannon system, with that generally followed in this Province. But the first thing to be done is to set forth the facts which must serve as a basis both in England and in Canada for this manufacture.

1. Fresh milk possesses of itself a certain acidity which does not come from the lactic acid, of which we shall speak further on, but from the casein it contains. In order that a cheese may ripen thoroughly and be of the best quality at the end of three months, Mr. Lloyd found that the acidity of the liquid issuing from the press must be equal to five times that of the milk used ; the acidity of the milk to be ascertained immediately after the milking.

2. He ascertained also that the humidity of the curd, immediately before being put into the press, must be 41.06 %.

3. When the curd is formed and broken up in the whey, it possesses the property of contracting under the influence of heat, expelling the greater portion of the whey imprisoned in the mass, like pressing a sponge. The more it is heated up to a certain limit the more it contracts.

4. Any acid will produce the same effect as heat. Consequently the more the whey in with the curd is in suspension, is acid, the more will

the latter contract. Later on, when the curd is withdrawn, the more the liquid contained in the curd is acid the more marked will be the contraction while drying the curd.

The acid that develops either in the milk, in the whey or in the interior of the curd is lactic acid. It is produced by a bacillus known as lactic ferment. This bacillus, germs of which are always contained in the milk after the milking, feeds itself on the lactose or sugar of milk which is always in a state of solution in the milk in the proportion of from 4% to 5½% according to the quality of the latter. It transforms this sugar into lactic acid. The most favorable temperature for the development of this microbe lies between 110 and 130 according to Duclaux. The action of the air is very favorable to its growth.

6. The property possessed by the curd of contracting under the influence of heat and acids is all the more developed that more rennet is used within a certain limit.

7. Some microbes secrete, at the same time as other products, a diastase known as casease, discovered by Mr. Duclaux, which possesses the property of re-dissolving casein precipitated by rennet. It is not probable that the Cannon lactic ferment itself secretes some. The mucous membrane of the calf's stomach, from which rennet is made, also secretes some and also the cells of the cow's udder.

The milk, according to Duclaux, and the curd always contain a certain quantity of casease coming either directly from the cow's udder or from the microbes that develop in the milk after the milking, or from the rennet used, which always contains a certain proportion, and the casease, as we shall see, plays a very important and favorable part during the ripening of the cheese. The more of it there is in the curd when put into the press, the more rapidly will it ripen; and efforts must be made to develop it during the ripening.

Such are the fundamental facts on which the manufacture of Cheddar is based. Now, the general process is as follows: The milk is curdled by the rennet; then broken in order that the whey may be expelled. The curd is afterwards scalded in the whey so that contraction may take place and the grains of the curd may dry interiorly to a certain degree. The acidity of the curd at this moment is from 0.12 to 0.16; entirely

too weak. The whey is then drawn off and the curd gathered together in order that it may unite and cake in a mass; then it is drained and exposed to the air so that the lactic ferments may develop and produce the required acidity which, while being produced, completes the contraction of the curd while drying it to the required degree. It is then cut and salted. At that moment it should contain only about 41.06 o/o of humidity; its acidity should be about 90. The curd is then put in presses and moulded into cheeses which are carried to the ripening room where they ripen in two or three months.

The great thing is to have enough acid in the curd at the moment when its degree of humidity is about 41 o/o or to have it dry enough when it has the required acidity and this is not always easy as we shall see: sometimes the curd contracts and dries too slowly and badly: sometimes the acid develops too quickly without giving it time to dry or not quickly enough, the curd drying too much. There is likewise the question of the quantity of casease, of lactose and of lactic ferments which the curd must contain at the moment when put into the press and which are absolutely necessary for its ripening.

I would observe here that this general sketch of the manufacture of Cheddar dates only from the labors of Duclaux & Lloyd and that, in practice, it is not yet well understood. The manufacture is still carried on nearly everywhere on the basis of rules that are quite empirical and with means of control that are quite primitive: the sense of taste, smell and sight; means which are but little sensitive and call for a long apprenticeship on the part of the maker before he can obtain good results. Moreover, these means are not infallible.

The acidimeter recommended by Mr. Lloyd is not yet in use: it can however advantageously and in a great measure replace the five senses as a means of control, by allowing the manufacture of cheese to be followed in a sure manner and the desired result to be attained without a long apprenticeship.

I shall return to this important subject of the means of control. It deserves the greatest attention.

The principal operations in connection with the manufacture of Cheddar cheese may be classified to the number of eight, whatever may be the system followed:

1. Receiving and ripening the milk ;
2. Coagulation of the casein with rennet ;
3. Breaking the curd and first developpement of acid ;
4. Scalding ;
5. Drawing off the whey ;
6. Fermentation and draining of the curd, grinding in the mill, salting ;
7. Pressing ;
8. Ripening ;

RECEIVING AND RIPENING THE MILK.

Object of this operation.—The object of this operation is to develop a certain degree of acidity in the milk before renneting.

According to the analyses made during eight years by Mr. Lloyd, the milk, immediately after milking, possesses a natural acidity due, not to the lactic acid, but to the casein or the salts dissolved in it. This acidity would be 0.19 for normal milk in England ; it should never be less than 0.17 nor more than 0.22. Outside these limits, the milk would be abnormal. To increase this acidity, the development of the lactic ferment must be promoted by proper temperature.

The ripening of the milk before renneting is important, because it shortens the duration of manufacture. If we start with a milk weak in acidity, the curd can be put into the press only late in the evening and the cheese is not so good ; if we start with strong acidity, the cheese can be put into the press early in the afternoon ; but there is a risk of other drawbacks, amongst others the loss of a considerable amount of fat. In England, Mr. Lloyd recommends starting with an acidity of 0.20. The importance of this ripening is due to the fact that, through it, the number of bacilli of lactic acid is increased at the every outset of the operations and, consequently, the fermentation of the curd will take place better and more rapidly later on before putting the cheese into the press. It would appear also that this ripening, while furthering the development of the lactic ferments, also furthers that of the microbes producing casease or an analogous diastase and that, as the curd will consequently contain more casease, it may feel its influence during the ripening. This latter question was not studied specially by Mr. Lloyd, but Mr. Duclaux points it out in his searches.

Candy system.—In this system, the milk from the evening's milking is

at once conveyed to the factory, that is between 6 and 6.30 (each farm may be said to have its own factory) and is strained to free it from impurities. The temperature then ranges generally between 87° and 91° . Efforts are made to have it ripen during the night, that is to slightly increase its acidity. For this purpose, arrangements are made to maintain its temperature in such manner that it shall not go below 78° before 10 p. m. nor below 68° before the morning's milk comes in; by this means the acidity increases about 0.01 during the night: from 0.19 that is was in the evening it rises to 0.20 in the morning. The morning's milk comes in between 7 and 7.30; it is mixed with the night's milk after being strained. The temperature of the whole is then raised to 84° by heating a certain quantity of the morning's milk. Enough is taken to prevent its being necessary to heat it to 100° to bring the temperature of the whole up to 84° .

Cannon system.—In this system, the process is the same as in the Candy system but efforts are made to bring the night's milk to the temperature of 82° and arrangements are made to have it within the neighborhood of 69° in the morning. The acidity increases during the night by about 0.01. Before mixing the morning's with the evening's milk, a certain quantity of the night's milk is taken and sufficient is taken to allow, by heating it a few degrees only and mixing it with the remainder of the milk, of the latter being brought up to 84° . The acidity of the night's milk is 0.19; that of the morning's is 0.20.

To get a larger number of germs in the milk before renneting, a certain quantity of the whey from the previous day is added as a ferment. Enough is added to bring up the acidity of the whole up to 0.21: from one to three gallons for every hundred gallons of milk on an average. If the increase of acidity during the night be slight, from three to six gallons may be added; if it be considerable, none is added. Mr. Lloyd recommends that the acidimeter be used at this stage of the manufacture; he also recommends testing with rennet. He claims that this test is as accurate as that made with the acidimeter. According to him, the whey acts in an energetic but uncertain manner: he recommends that the least possible quantity be used. When the milk of the night before is tainted, it should never be used.

Canadian system.—Formerly the milk was brought to the factories

morning and evening, but this practice was discontinued in consequence of the difficulties of transport due to bad roads. At present, the milk is brought in the morning. Some patrons cool the night's milk ; others do not. No care is taken to ripen this milk. The milks differ greatly from one another. They are mixed in the vat where there is a milk of average, uncertain quality to be dealt with. To ripen it in cold weather it is heated some time before renneting. During the summer, when the weather is warm, it is often too far advanced. To determine its degree of ripeness, it is tested with rennet. (Monrad or analogous process). It is ready for renneting when, with this test, it curdles in from 18 to 20 seconds at 86°. The acidimeter is not yet used in our factories although its use has been frequently recommended.

For renneting, the milk is brought, not to 84° as in England, but to 86°. The quantity of milk treated at a time is much larger than in England.

Whey is not used. Pasteurization of the milk and the use of pure culture ferments have been recommended and tried in the autumn and spring for the purpose of bringing the milk to the required degree of acidity. The result has been satisfactory. It must not be forgotten that the action of the ferments thus added at the beginning of the process of manufacture, is felt throughout the entire series of subsequent operations. Experiments might be made to positively ascertain the rules to be followed in the use of these ferments which would probably be advantageous in this Province, owing to the very variable and *frequently bad* quality of the milks brought to the factory.

Remarks on this first operation.— We have seen that, in order to obtain a good cheese, the acidity of the whey flowing from the press should be equal to five times that which exists, at the time of milking, in the milk used. We have also seen that the milk here is probably much richer than in England, at least in some parts of the Province. On the other hand, Mr. Lloyd found that the natural acidity of the milk at the time of milking is closely connected with the proportion of solids in the milk : the greater

this proportion the greater should be the acidity in this case. Consequently, milk in this Province being supposed to be much richer than milk in England, their natural acidity should be greater. If the acidity were greater more acid should remain in the whey flowing from the press; therefore the process of manufacture must be modified so as to favor the development of lactic acid during the whole process of manufacture.

RENNETING

Object of this operation.—The object of this operation is to separate the casein from the serum in which it is dissolved and to form the curd out of which cheese is to be made. The quantity of rennet to be used is very variable: it depends upon the strength of the rennet, the temperature of the milk and its degree of acidity. Good rennet can, in 45 minutes, coagulate from 8,000 to 9,000 times its volume of milk at a temperature of between 84° and 86° , the curd obtained being very firm.

The rennet should always be carefully measured and diluted in water at 60° or 65° before being used. The temperature of the milk should be carefully ascertained.

The quantity of rennet to be used is of great importance. Rennet, as we have seen, not only curdles the casein, but communicates to it the property of contracting under the influence of heat and acids and the more it is used, up to a certain limit, the more this property is developed.

Moreover, in curdling, the casein absorbs (at least it acts as if it absorbed) a portion of the acid contained in the whey. At that moment the acidity of the whey is only about two thirds that of the milk: from 0.21 for instance, the acidity of the whey falls to 0.14 or 0.15. The more rennet is used, the greater is the proportion of acid absorbed.

Therefore if a good quantity of rennet be used, a firm curd is obtained which is more acid and properly retains the fatty matter, the loss whereof is then slight.

If too large a quantity be used, the curd contracts very rapidly when

broken : it then expels the fatty matter in an important proportion, especially if the milk be acid and if the temperature of the milk be comparatively high, as the fluidity of the fat increases with the temperature. At the same time the curd obtained is dry, which gives a bad quality of cheese.

If too little be used, a soft, weak curd is obtained with very weak contractile qualities, which retains fatty matter badly and produces a soft, damp cheese which spoils quickly if care be not taken to prevent this during the subsequent operations.

I may add that Mr. Lloyd has made experiments to determine the influence of the quantity of rennet used on the quality of the cheese. *The experts have always found that the cheeses made with a large quantity of rennet were of inferior quality to the others.*

On the other hand, some rennets contain casease. The action of the casease is slower than that of rennet and it happens that if too great a quantity of rennet containing casease be used, the action of this casease makes itself felt at the end of a certain time by partially re-dissolving the curd precipitated by the rennet and a damp and soft curd is again obtained which is of a special character and produces very bad cheese. It may also be said that over-ripened milk produces the same effect ; during its preliminary ripening certain microbes producing casease develop in it and this casease acts as we have just seen, at the same time as that introduced by the rennet, to soften the curd.

This defect was not pointed out by Mr. Lloyd in England ; it would appear, however, that it is not rare in this Province, and it would be advisable to study the matter. It is not surprising here, considering the want of care taken of milk in our country parts.

Finally, all rennets are not of equal quality and the quantity used does not indicate anything unless its strength be known.

The quantity of rennet to be used is therefore of the highest importance and necessarily affects the treatment of the curd during the remainder of the operations.

Candy system.—In this system, the temperature of the milk at the time of renneting should be 84° . The quantity of rennet to be used is about 1 lb for 8,000 lbs of milk in summer and 1 lb for 7,000 lbs in cool spring and autumn weather. When the milk is very ripe, a little less is used : if but little ripe, a little more.

After adding the rennet, the milk is stirred for five or six minutes. The tub is covered to keep up the temperature. A sufficiently solid curd should be formed in 45 minutes.

Cannon system.—The process is the same as above but the stirring lasts ten minutes. The temperature for renneting is 84° : the duration of the curdling, 45 minutes.

Canadian system.—The milk is brought to a temperature of 85° . Sufficient rennet is used to curdle the milk in 30 or 40 minutes, that is to say : one pound of rennet for 5,000 or 6,000 lbs of milk. After adding the rennet, the milk is stirred for some minutes and is afterwards allowed to curdle quietly after covering the tub to keep up the temperature.

Remarks.—In the Candy system, the acidity should at that moment average from 0.20 to 0.21 ; in the Cannon system it should be from 0.20 to 0.21, for whey from the previous night has been added to it ; in the Canadian system, although it has not yet been determined, if certain indications may be relied on, it seems to be higher, as a rule, than in the Cannon system.

In the Candy system, the cheese is put into the press at about 8 p. m ; in the Cannon system about 4 or 5 and in the Canadian system about 3 o'clock which shows a tendency to proceed more and more quickly.

The quantity of rennet used in this Province is greater than that used in England. What is its strength compared to that of English rennet ?

Attention must be called to the soft curd sometimes obtained when a strong dose of rennet is used and which may indicate, if milk is of good quality, that the rennet contains a pretty large quantity of casease whose action may be felt during the ripening of the cheeses.

What also is the influence of the ripening of the milk on the production of casease and the influence of the latter on the ripening of cheeses ?

Searches would have to be made in this direction, for, as will be seen, there is an increasing tendency to have cheese quickly ripened.

BREAKING THE CURD.

Object of this operation.—When the curd is formed, it is cut up and broken into small pieces to remove the serum or whey it contains.

At the moment when the milk curdles, it contains, besides casein and water :

1. Lactose or sugar of milk in solution in the water ;
2. Fatty matter not dissolved but merely in a state of emulsion that is in the form of small globules suspended in water ;
3. Lactic acid, a portion whereof is combined with the lime of the casein and the other is in solution in the water ;
4. Phosphates partly in solution and partly in suspension ;
5. Microbes of various kinds but especially microbes producing lactic acid, the number whereof is all the greater if the milk was more ripened before the renneting or if more whey or ferment has been added.

When the milk is curdled, the following is found in the coagulum : a certain quantity of lactose, as Duclaux has shown, remains united by a species of molecular cohesion with the casein, the remainder being in solution in the serum.

The fatty matter is imprisoned inside the curd, but not combined with the casein.

The lactic acid is retained in larger quantities in the curd which, as we have already seen, decreases the acidity of the serum by about one third.

The microbes, like the fatty matter, are imprisoned in the meshes of the curd, as well as the phosphates that were in suspension in the milk.

On its side, the serum retains in solution, besides the remainder of the lactose, a portion of the added rennet, some casease introduced at the same time as the rennet and casease produced in the milk by the ordinary ripening or coming from the cow's udder; the remainder of the rennet and of the casease is united to the curd by a species of affinity not yet well defined. Mr. Duclaux has studied this question. It also contains in solution the remainder of the lactic acid and of the phosphates.

When the curd is cut or broken, it contracts at once, all the more strongly and quickly, according as more rennet has been used, as its temperature is higher and its acidity greater. This contraction forces out a good deal of the serum from inside the grains of the curd, but the greater portion of the microbes and of the fatty matter remains imprisoned in it. If the contraction be sharp and the temperature relatively high, a larger proportion of fatty matter will come out. One-third of the lactic acid remains united with the curd; the lactose comes out with the serum in which it is dissolved, but the proportion is less in the serum that comes out than in that which remains inside the grains; it is the same with the rennet and casease. If but little rennet has been used, the curd is soft and retains the fatty matter badly and the microbes, especially if cut without precaution; it contracts weakly and a curd is obtained that works badly in the subsequent operations. In this case, the loss of fat may also be rather important.

While the milk is curdling and the curd is being broken, if the temperature be favorable to the development of the microbes, the latter continue their work and the production of lactic acid goes on. The rennet begins to oxydize and to be destroyed, but not the casease which is more resisting. It begins to make its action felt which is the opposite of that of the rennet and to re-dissolve the curd that has been formed. If the proportion be great, the faculty of contracting possessed by the curd decreases, and if the quantity of microbes producing casease be sufficient, its proportions may increase in such manner as to become harmful especially at the temperature of the curd, which temperature is very favorable to its action.

At this moment, therefore, we have serum in which grains of curd

are floating and these grains contain water, lactose, lactic acid, fatty matter, casease, rennet and microbes amongst which are lactic ferments especially. The serum contains the same things but in much smaller proportion.

The size that the curd grains should be cut is important on account of the scalding as will be seen further on.

The curd may be broken in various ways and the same result be obtained, but the object of the changes in the various breaking processes is chiefly to prevent loss of fatty matter. If the curd be soft, great precautions must be taken; if the curd be firm, the process may be a little quicker if the temperature be not too high.

Candy system.—When the curd breaks clean over the fingers it is fit to cut. This should be about 45 minutes after renneting, the temperature of the tub being 84°. The surface of the curd is then broken and turned over for a thickness of two inches with a special implement in the shape of a skimmer. The tub is again covered up and the whey allowed to rise above the curd for about 15 minutes.

After that, the curd is cut and broken up into small pieces with a kind of little wooden shovel with cutting edges.

The fragments must be small and with sharp edges. As a rule it takes 50 minutes to break and cut the curd for cheeses. With a larger quantity of milk two men would be required instead of one to work in the same time and manner.

Cannon system.—In this system, the curd is considered fit to cut when, on passing the bulb of a thermometer on the surface of the curd, the latter breaks away with a clean fracture and does not fall away in little pieces on either side. When this consistence is obtained (which should be 45 minutes after renneting, the temperature of the milk being 84°, and never before) the curd is cut. It must be cut very evenly and carefully to avoid loss of fat. There is greater risk of losing it during this operation. American curd knives may be used for cutting it. The curd is then allowed to settle in the bottom of the tub and the whey to rise to the surface.

The latter should have risen about an hour after the renneting. When it has risen, the curd should be broken into small pieces of about the size of a pea. This operation generally takes about half an hour. Then the curd is left again to settle, when the quantity of whey required for the next day's fermentation should be drawn off, taking it from the surface.

Canadian system.—The curd is known to be fit to cut when it breaks clean over the finger; the break must be clean and the whey filling the crack must be clear and not whitish. This should occur 30 to 45 minutes after renneting; temperature, 86°.

The cutting should be done with American knives, which allow of large quantities of the curd being worked in a short time, without increasing the loss of fat. The whey is not allowed to rise, nor the curd to harden, during 15 minutes after the first cutting. In Canada, much larger quantities of milk are worked at one time than in England.

SCALDING AND FIRST DEVELOPMENT OF ACID IN VIEW OF THE CONTRACTION OF THE CURD.

Object and theory of this operation.—The operation under present consideration aims especially at the contraction of the curd in order to expel the whey from it.

As, at this stage of the manufacture, the effect of the acid cannot yet be much reckoned upon for this purpose, recourse is had to heat, whence the operation of scalding. But the temperature at which the scalding is effected is exceedingly favorable to the development of the microbe of lactic acid. During this operation therefore, the acid will begin to develop with a great deal of activity and its influence will add to that of the heat in producing the desired contraction. The temperature is progressively raised until it amounts to between 90 and 110. During the scalding, the following happens:

In the first place, the curd contracts progressively in keeping with the use of the temperature and dries up.

The microbes which it contains and in particular, the lactic ferments, continue to develop; the proportion of lactic acid inside the grains

increases and this acid becomes dissolved in the serum still imprisoned within these grains of curd.

Mr. Lloyd found that the whey in which the grains of curd float contains, so to speak, no microbes and that all the microbes are enclosed in the grains of curd. If the acidity of the whey increase, it is due, therefore, to the fact that it exudes from the grains of curd as these contract, that is to the diffusion of a liquid richer than it in lactic acid and issuing from these grains.

As for the lactose or sugar of milk, it is in a state of solution both in the whey in which float the grains of curd and in the serum enclosed in those grains. Gradually, as it is consumed by the bacilli inside the grains and transformed into lactic acid, it is replaced by fresh lactose from the whey outside, which penetrates thereinto by diffusion.

The globules of fat remain imprisoned in the curd. However, if the temperature be high, if the contractibility of the curd be strong owing to the use of a heavy dose of rennet, if the acidity of the whey be at the same time very great, they will contract rapidly and a certain proportion of the globules, which are very fluid at that temperature, will be again expelled as at the time of cutting, and there will be a loss of fat.

Fat will be also lost as previously if the curd be too soft owing to the use of a weak dose of rennet, the milk being slightly sour at the same time, and if the curd be stirred up too much in the whey.

Lastly, loss will again occur, if the curd be soft owing to the casease arising either from the rennet, from the udder of the cow, or from the development in the milk and the curd of certain microbes such as the "*Tyrophthix tenuis*" of Duclaux.

As for the rennet during the operation, it continues to destroy itself, probably by oxydation resulting from the fermentation.

The curd may dry up too much in the whey : this occurs, when the contractibility of the curd is too great or when it is scalded at too high a temperature. In such case, if the milk has been renneted before being sufficiently ripe, if there be in consequence few bacilli in the grains of

the curd, these grains lack humidity and consequently lactose to nourish the bacilli, the fermentation of the curd during the following operation will take place very slowly, the curd will not be fit to put to press until late in the evening and a dry cheese, which will ripen very slowly, will be the result.

It may not dry up enough. This happens when little rennet is used and when the scalding is done at a high temperature. It also occurs when, for one reason or another, the curd contains too great a proportion of casease, for the casease destroys the contractibility communicated to the curd by the rennet and it is just at this moment especially that its action begins to make itself felt.

In both cases, a soft, damp curd is obtained, and if the milk has been much ripened before the renneting, the curd sours greatly and quickly, for in that case it always contains a large number of bacilli and a heavy proportion of lactose. A curd is then produced, which must be put to press very early and which turns out a cheese of bad quality, soft, acid and liable to spoil very quickly.

These are the two extreme cases, but there are also all kinds of intermediate cases.

The question of the casease at this stage of this manufacture was not studied by Mr. Lloyd, but by Duclaux, and it deserves consideration (See "*Le Lait*" by E. Duclaux, 1887.—"*Les principes de Laiterie*" by E. Duclaux and "*Le Traité de Microbiologie*" by E. Duclaux, 1898).

The curd should not be scalded at too high a temperature, because in that case, there forms on the surface of the grains a more or less thick skin of hardened curd, which prevents the serum from getting out and the lactose from getting in. In addition, this skin prevents the grains from cementing easily and the texture of the resulting cheese is bad. The curd should be cut fine enough for the heat to penetrate to the inside of the grains, without being compelled to increase the temperature enough to harden the surface of the grains.

The heating must not be done too rapidly, for, in that case, the loss of fat is increased, as already mentioned; time moreover must be given to let the lactic fermentation set in. Nor should the heating be done too

slowly ; otherwise the action of the casease is too great and the result is a soft curd with weak contractibility and often a sour curd, the lactic fermentations getting too much of a start over the drying.

The following are the conditions to be aimed at :

1. The milk should not be too ripe, to begin with, in order to not give too much start to the lactic fermentation ; it should be ripe enough in order that the fermentation be not delayed.

2. Enough rennet should be used to impart sufficient contractibility to the curd ; too much should not be used to avoid imparting to it too much contractibility and also to obviate the action of the casease which may be contained in the rennet or in the milk.

3. The milk should not be too rich in casease or in microbes, which produce casease.

4. When the whey is drawn off, the curd should contain sufficient humidity, lactose, lactic acid and lactic ferment and enough contractibility, in order that the acidity of the curd, at the moment of putting to press, may be about five times the natural acidity of the milk and, at the same time that there may remain in the curd only 41.06 of humidity.

This is the difficult point to attain ; sometimes the acidity progresses too quickly in proportion to the contraction and sometimes the contrary happens.

Mr. Lloyd sought to find an easy and reliable means of controlling this and he arrived at the conclusion that the surest test that can be actually had is the acidity of the whey.

He ascertained that, in all cheeses of good quality, the acidity of the whey at the end of the scalding and the moment of drawing off had been a little less than the acidity of the milk at the moment of renneting, that is to say, about 20.

At this stage of the manufacture, therefore, the acidimeter should be used as a test.

Thus far, the only tests have been taste, feeling and the hot iron, all

of which are far from being accurate for the ordinary run of manufacturers.

Candy system.—The curd is twice heated, the second time at a higher temperature than the first.

Firstly, enough of whey is heated at 120° to raise the temperature of the curd to 94° , when it is stirred for two minutes and then allowed to settle. Secondly, the desired quantity of whey is taken and heated at 126° , when it is poured upon the curd, the temperature of which is also raised to 106° . These two operations take about half an hour. The curd is then stirred for three minutes and left to settle. Fifteen minutes later, it is collected into the centre of the tub in such a way as to leave between the cake or mass thus formed and the sides of the tub a space of 6 inches. It is allowed to so remain during 30 minutes to contract, harden and gather acid. Then, the whey is drawn off, when the curd should be in the form of small, firm, elastic grains (shotty).

Cannon system.—The scalding is also done twice, but at a lower temperature than in the preceding method.

A quantity of whey equal to about one fourth of the contents of the tub is heated at 110° and then poured on the curd while stirring the latter. The curd is thus brought to 88° . If the acidity develop quickly, the stirring should not be continued for more than five or ten minutes.

A second quantity of whey is then taken, about one seventh of the contents of the tub, heated to 130° and poured on the curd, stirring the latter, which thereby acquires a temperature of 92° to 94° . The stirring is continued for 30 minutes. The curd should then be in the form of pretty firm small grains (shotty), when it is massed in the centre of the tub and the whey is drawn off.

Canadian system.—The heating is done in a water-bath and progressively. The great object is to get an increase of one degree in the heat every five minutes. The stirring is kept up constantly. The heating is continued

until a temperature ranging between 98° in spring and 110° in the autumn, is reached. The proper time to draw off the whey and to find the curd sufficiently scalded is ascertained by the hot iron test. There should be from one eighth to one fourth of an inch of acid in April and May and this is increased gradually as the milk grows richer with the advance of the season ; it may even reach half an inch or more in the autumn. When the requisite acid has been secured, the whey is drawn off. The scalding lasts about an hour.

As already seen, in the English systems, the curd is deemed to be scalded enough by estimating the degree of acidity by the taste and examining with the eye and the touch the grains which should be what is termed "shotty," that is to say, elastic and firm. In this Province, the hot iron test is employed ; but these modes of determination are not very sure and demand a long apprenticeship to yield satisfactory results.

Mr. Lloyd recommends the acidimeter, which is certainly the best test that can be imagined.

Mr. Lloyd recommends to draw off the whey when its acidity has again become as great as that of the milk at the moment of renneting, that is to say : about 0.20.

AGGLOMERATION AND FERMENTATION OF THE CURD.

Object of this Operation.—The object of this operation is to agglomerate the grains of curd and especially to develop acidity therein.

Theory of this Operation.—At the moment of drawing off the whey, it has already been shown that its acidity should be as close as possible to that of the milk at the moment of renneting, rather greater if anything. This is not easily attained ; but efforts should be made to come close to it. This acidity should be comprised between 0.19 and 0.22.

From that moment, it must be increased sufficiently so that the liquid

leaving the press may have an acidity five times greater than that of the milk at the milking, that is, to say about 1 %.

This is attained by facilitating the development of the lactic ferment enclosed in the grains of curd with a certain proportion of lactose, which is in a state of solution in the serum.

As the proportion of acid increases, the curd contracts by continuing to expel the whey.

In order that the operation may succeed properly, the curd—as already seen—must, at the moment that the fermentation begins, still contain enough of whey so that, when the acidity is in the neighborhood of 1 %, it will still contain 41.06 % of moisture.

When the whey is drawn off, the temperature of the curd is comprised between 90° and 110°. During this fermentation, the temperature will fall gradually to between 73° and 95° at the end of the operation, according to the seasons and the methods employed. At the outset of the operation, the object especially is to agglomerate the curd and to drain it, this is why it is cut first into large blocks which are compressed by means of weights or pressed down one upon the other. From time to time, these are recut and stirred up to aerate them and quicken the development of acid. They are cut each time into smaller and smaller pieces. At the start, the aim is especially to favor agglomeration and draining. At the end, the development of acid is chiefly kept in view in aerating the curd more freely and keeping the temperature high.

There are certain curds, which, as already mentioned, have a feeble contractibility either owing to the nature of the curd, to the use of too small a quantity of rennet or to the action of the casease.

In that case, the acid takes such a start over the drying that it is necessary to put the curd in vats before it is dry enough, the result being a soft, sour cheese. On the other hand, the contrary happens where the acidity is slow in developing, and, in that case, the puffing to press is greatly delayed.

The manner in which the foregoing operations have been performed

therefore greatly influences the manner in which the fermentation, which can be effected in many different ways, is conducted.

Candy system.—The curd is first cut into large blocks of 1 cubic foot, which are turned over and covered in order to retain the heat. They are left under the covering for about five minutes. At this time, their temperature is about 84° . The blocks are next cut in two and taken to the cooler where they are packed all the more closely together, that the acid may be slower in developing: the heat is also maintained better in this way at the beginning. They are then covered over again. After a lapse of twenty minutes, they are turned a third time and a fourth half an hour later. They are next cut into three inch cubes, which are heaped up and again covered. They are left thus for twenty minutes and then aired. Thirty minutes later, they are again aired and, for the last time, forty minutes afterwards. The curd is then ground (towards 5.30 o'clock) spread over the drainer and left there until eight o'clock, when it is salted at the rate of $2\frac{1}{2}$ lbs of salt to 112 lbs of curd and put into the vats to be pressed. The temperature is then 70° . At the beginning it was 100° .

Cannon system.—You begin by forming the curd into a circular heap in the middle, leaving a vacant space of six inches between the sides of the heap and the sides of the tub: the heap is then cut into blocks of six to eight inches square, which are turned over. These are again formed in the centre of the tub into a block, from which all the square edges are cut away and which are covered to keep in the heat. These blocks are left to contract and to let the whey drain off. When the latter no longer flows except drop by drop and when the acidity has increased by one half what it was at the start, the curd is cut into six or eight blocks, carried to the cooler and broken by hand into small pieces which are formed into two parcels, each of which is enveloped in a wrapper. They are then placed one upon the other and covered with a tin plate upside down, upon which is put a disk of wood loaded down with a weight ranging from 56 to 84 lbs according to the quantity of curd. To quicken the development of the acid, another wrapper may be thrown over the whole. After half an hour, the curd is cut into pieces 4 inches long and 2 inches broad and thick, two piles are made of these and the whole is treated as the preceding

At the end of half an hour, the curd is again cut a third time, but into cubes of 1 inch, which are still left under pressure for another half hour. A fourth cutting may be given, if the curd is not yet mellow enough.

The curd is then ground and evenly salted at the rate of $2\frac{1}{2}$ lbs per 112 lbs.

Canadian system.—In the Canadian system, after drawing off the whey, the curd is spread over a cotton strainer supported on a wooden grating laid on the bottom of the tub and forming a dripper. It is stirred and then spread in a layer of six inches in thickness. The ends of the cotton are turned down over the curd and the tub is covered to keep in the heat.

Twenty five or thirty minutes later, the curd taken up is cut into large blocks, which are turned over several times and at closer intervals at the start. At this time, the temperature is kept between 96° and 98° .

At each turning, the blocks are next piled one upon the other in two, three and even ten rows according as the case may be. In some factories, piling is not practised, especially if the milk be very ripe. Two or three hours after the curd has been collected together on the drainer, it is in the form of cakes and is, generally speaking, fit for grinding. After grinding, it is left for a while in a heap, which is stirred from time to time. It is next salted at the rate of 2 to 3 % of salt and a quarter to half an hour is allowed for the salt to dissolve. Temperature, 90° . It is then put into the press.

Remarks.—It is by the appearance of the curd that it is judged in England to be fit for grinding. It should then be firm and have a silky texture. In Canada, in addition to this, the hot iron test is used; the curd should then show $1\frac{1}{2}$ to 2 inches of acid.

Mr. Lloyd recommends the acidimeter as the test and the acidity of the whey which flows off at the end of the operation should, according to him, be 0.90.

When the whey has been drawn off, the lactose can no longer pene-

trate the grains of curd by diffusion, as previously, keeping pace with its transformation into lactic acid and, from this out, the bacilli must exist on the supply contained in the curd.

Heat quickens the fermentation and this is why the blocks are packed one upon the other and wrappers are put over them; but if there be an absence of air in the interior of the curd, in spite of a good temperature, the fermentation works badly; wherefore it is aired from time to time.

A few instants exposure to the air is sufficient to supply all the oxygen required. Advantage is taken of this to air without cooling, as already seen, by cutting the curd into pieces and forming these pieces into heaps in which the heat keeps up well. From the beginning to the end of the operation, the pieces are cut smaller and smaller and the intervals of rest are longer and longer.

PRESSING.

The temperature at which the cheese should be vatted is, according to Mr. Lloyd, of no great importance, provided always that it remains between 60° and 80°. In the Candy system, it is at 70°; in the Cannon system, it ranges between 57 and 81°, and in Canada, 80° to 85° is recommended.

The quantity of acid in the curd at the moment of putting into press is about 1.02 o/o in the English systems and slightly higher in the Canadian.

For English cheese, the humidity is 41.96; for Canadian cheese, it is probably in the neighborhood of 37 to 38.

From the moment that the cheese is fit to salt to that of putting it to press, the acidity increases by about 0.1 in the three systems. In the three systems, the pressing is done at first lightly, all the pressure being only put on after some time: about $\frac{1}{2}$ to 1 hour. The cheeses are then dressed and replaced in the press, screwing them down strongly, when they are left under this pressure until next morning.

In England, they are taken next morning from the first press and put into a more powerful press; the following day, they are placed in a still more powerful press where they remain two days more; and each day

they are turned over, the old cloths being replaced each time by new ones. On the morning only of the fourth day is the cheese greased ; in Canada, this is done the day after making.

As more cheeses are made daily in Canada than in England, if the cheese were left three days in press, very large presses would be needed : perhaps, it is the want of pressing that causes firmness in the cheese to be aimed at by making it drier. As regards the relations between the duration of the pressing and the firmness of the cheese, there is, I think, need for searches to be made.

CURING.

The curing of the cheese is one of the most important operations in its manufacture. Its object is to impart to the curd the properties which transform it into cheese.

It has been seen that, from the time the milk is brought to the factory, the endeavor has always been to favor the microbes of the lactic acid and that these microbes play the chief rôle in the making of Cheddar.

When putting into press, the acidity of the milk from the press is about 1%. From this out and during the curing, the microbes of the lactic acid continue to act upon the lactose contained in the cheese and to increase therein the proportion of acid, which attains 2% and over when the cheese is ripe. For this purpose, the cheese must be at a temperature in the neighborhood of 64° to 65°.

But the development of the lactic acid is not the only thing produced during the fermentation. The casease, either introduced during the making, or produced during the curing, makes its action felt, but it is very slow. It renders a part of the casein soluble. Is any casease produced by the microbes of the lactic acid? Not very likely, because these microbes feed especially on sugar. However, as their aerobic existence now becomes more or less anaerobic, perhaps there is a certain quantity of casease produced by them.

On the other hand, in the searches which Mr. Lloyd made in England, he found no tyrothrix producing casease in the cheese. This question of casease production remains therefore an open one. Whatever may be the case, a portion of the casein is rendered soluble.

Generally speaking, a moist and acid cheese ripens more quickly than a dry one, probably because, in a very moist and acid cheese, there are more lactose and lactic acid microbes than in a dry cheese and the lactic acid seizes upon the lime associated with the curd in one form or other and combines with it. Messrs Lloyd and Duclaux have studied this point.

In the milk, as already mentioned, there is a host of germs other than those of the lactic acid and these germs penetrate into the curd. While the lactic ferment predominates, the microbes injurious to good curing are held in check and the cheese ripens regularly, but if the development of the lactic ferment relaxes, that of these microbes may get the upper hand and the cheese spoils.

This happens especially in the case of bad milks and if the cheese be kept at too low or too high a temperature, which is more favorable to certain bad microbes than to the good ones.

When almost all the lactose of the curd has been consumed and the proportion of acid attains a certain limit, the development of the lactic ferment, that of the other microbes and especially that of the butyric ferment, takes the upper hand. This is the moment when the cheese is ripe.

If, at this moment, the temperature be suitable, the more the lactic and the other good ferments develop quickly, the more quickly does the casease act and the cheese ripen. However, the action of the casease being slow, if the lactic ferment cease its work, the noxious microbes begin theirs before the casease has produced its full effect and a bad result is obtained.

In England, the calculation is that a good cheese should fully cure in 12 or 13 weeks at a temperature of 65°. Such cheese should contain 41.06 of moisture and 1 % of acid in the whey, when put into press.

Slow-curing cheeses are made, which ripen in 7, 8, 9 months and upwards at a temperature of 50° . These cheeses must be drier and less acid when put into press.

No experiment has been made to determine whence comes the nutty flavour so much prized in these cheeses ; it would seem, however, that the action of the casease is not a stranger to it.

A cheese that ripens slowly and that remains long afterwards subject to its action, is always better than one in which the lactic fermentation works quickly and which must be sold before the casease has time to act sufficiently.

It would be very desirable that enquiries should be made to determine the origin of the casease in Cheddar, its action, and if there be several kinds.

In Canada, the cheeses are probably drier than in England and are cured at a very variable temperature from one day to the other, ranging between 60° and 80° . This is much to be regretted ; such cheese is often sold at the end of 10 to 15 days, when the development of the lactic acid is still actively going on. The moment when the lactic fermentation is greatest is between 6 and 8 days. This cheese, in full course of ripening, is then put into cold storage, where it is kept at a low temperature, and where the curing is more or less checked. It is consequently not surprising that the products so obtained should be very irregular.

GENERAL REMARKS.

The old methods of making Cheddar were very slow, because from beginning to end they were carried on at a very low temperature and with the accompaniment of prolonged manipulations.

Thus, in the Harding system, one of the oldest and to which I have not previously referred, no precaution seems to be taken to ripen the evening's milk. Then the milk is renneted at 80° : it is curdled at 80° , and it is scalded at between 80° and 100° . The curd is fermented at 60° and it is cured in five or six months at a low temperature (probably 50°) in cellars. This was the way in which the farmers proceeded at the outset.

In the Candy system, the evening's milk is ripened ; the renneting is done at 84° ; curdling is effected in 45 minutes at 84° ; the scalding is done at 94° ; the curd is fermented at between 94° and 70° ; it is put into press at 70° ; the pressing lasts three days and the curing is done at 65° . The curd is fit to be put into press at 8 o'clock in the evening and the cheese ripens in twelve to thirteen weeks.

In the Cannon system, not only is the evening's milk ripened, but the whey of the previous day is used as a ferment. Renneting is done at 84° ; curdling is effected in 45 minutes at 84° ; the scalding is done at a temperature approaching 100° ; the curd is fermented at between 91° and 70° ; it is put into press at 70° ; the pressing is continued during four days and the curing takes 12 to 13 weeks. The curd is fit to go to press towards 3.30 or 4.00 p. m.

Lastly, according, to the Canadian system, the milk is very strongly ripened before renneting. Curdling is effected in 30 to 40 minutes at 86° and the cooking is done at 100° to 110° . The curd is fermented about 94° and the cheese is cured in 15 days or 3 weeks at 70° or 75° . The curd is often fit to go into press towards 2.30 and 3 o'clock in the afternoon.

It will be seen from this, that the aim is to quicken the operations by starting from riper and riper milk, and by proceeding at a higher temperature. In addition to this, it is arranged to handle larger quantities of milk at the same time and with less expense for labor.

In the latter respect, the English methods seems defective.

Attention should also be called to the tests which have been in a large measure perfected ; the acidimeter test is now about to replace the hot iron and rennet tests ; this is a good thing, which will call for a shorter apprenticeship by manufacturers in order to obtain good results.

ACCIDENTS IN MANUFACTURE

The accidents in manufacture are due to two principal causes :

1. To the nature of milk ;
2. To the nature of the microbes contained in it.

1.—ACCIDENTS DUE TO THE NATURE OF THE MILK.

Mr. Lloyd has discovered that the milk of certain cows is very poor in casein, and that, in such case, the casein contracts with difficulty. The result is that when all the acid desired has been produced and the curd is fit in this respect to be ground, it has not been yet sufficiently deprived of its moisture. A soft and acid cheese is obtained.

Mr. Lloyd and Miss Cannon tried to find a means of drying this curd more rapidly by using a greater dose of rennet, but the result was bad. A heavy quantity of rennet always depreciates the quality of the cheese.

They then tried to scald at a higher temperature. The result was pretty good and Miss Cannon advises that, whenever milk of this nature has to be treated, it should be scalded at a higher temperature and that a little more acidity should be developed before grinding the curd.

These remarks are important, because it would seem that milk of this kind is pretty common in the Province, probably owing to the bad pastures and the lack of shelter for the cows from the sun.

2.—ACCIDENTS IN MANUFACTURE DUE TO THE NATURE OF THE BACILLI CONTAINED IN THE MILK.

Accidents of this nature are very frequent. It should be borne in mind that as many as a hundred millions of bacteria may be often found in a cubic inch of milk, the most of them coming from the atmosphere and multiplying in the milk. When this is remembered, it may well be asked how it is possible to make good cheese. In the first place, a large number of these bacteria exercise no action whatever on the milk; on the other hand, the microbes of lactic acid, which predominate, destroy many.

The chief difficulties met with in the making of Cheddar are known under the name of :

1. Vinegar taint ;
2. Spongy or holey curd ;
3. Faecal taint ;

4. Puffing of cheese ;

5. Fruity flavor.

1. *Vinegar Taint* - This taste of vinegar is due to two kinds of bacilli, the first whereof is known under the name of "Coccus of the vinegar taint" and the second altogether resembles the bacillus of lactic acid, from which it cannot be distinguished. It would seem that it is a variety of that microbe or a disease of that microbe, which modifies its character.

Whatever may be the case, whenever this accident happens, the development of the acid takes place too rapidly.

The remedy suggested by Miss Cannon is to scald at a higher temperature and to develop less acid in the curd before putting to press.

The second of these microbes is found especially in badly kept receptacles for the whey. It is the one which, of the two, imparts the strongest odor and the effect of which is the worst.

The first occurs in the droppings from the cows and probably also in their intestines. It falls from the cow into the milk at the time of milking or is carried into it by the wind, which raises from the ground dust containing dried cow dung.

2. *Spongy Curd*.—This accident is due to at least five kinds of microbes known under the names of: Coli No. 1, Coli No. 2, Guillebeau's Bacillus, Coli No. 3 and Coli No. 4. Not only do these bacilli swell the curd by producing numerous small holes in it, but the B. C. No. 1 imparts a very bad odor to it (fecal smell.) These cocci are derived from bad water drunk by the cows. The brooks or rivers into which sewers empty always contain them; they then develop in the intestines of the cows, passing out in the droppings and thence finding their way into the air and into the milk. Whenever cows are attacked with diarrhœa, they are found in their excrements and it is perhaps they which are often the cause of this diarrhœa.

Guillebeau's bacillus comes from the teats of the cows when the teats are ulcerated. It is also encountered in large quantities in the droppings of poultry.

These microbes prevent the development of acidity in the curd by swelling it and such curd is generally not fit to put into press until late in the evening. The remedy is to never grind the curd before having obtained the requisite acidity.

If this rule be followed, the cheese will improve in ripening unless it be too much infested by these bacilli.

3. *Fæcal Taint*.—This is a very bad taste which the curd assumes and is due to a microbe, which has not yet been identified. When this bad flavor is present, it is very difficult by the taste to determine whether the curd is acid enough for milling. The ablest manufacturers are deceived. Experience has shown that when this accident occurs, a high degree of acidity must be developed in the curd before vatting. This acidity kills the microbe and the cheese, in ripening, loses its bad taste.

4. *Puffing of the Cheese*.—This accident is due to an aerobic microbe, still unidentified, which develops in the cheese during curing. It may be also due to the microbes which produce a spongy curd, when they pass into the cheese in large quantity. This accident occurs only when the cheese is vatted before it has attained the needful degree of acidity; the remedy is therefore to develop in the curd, before vatting, a good degree of acidity.

OTHER PARTICULARS RELATING TO THE MANUFACTURE OF CHEESE.

Yeasts.—Mr. Lloyd notes certain varieties of yeasts in the milk, curd and cheese. These yeasts would develop well in connection with the lactic acid. Experiments have shown that they improve the flavor of cheese.

Mr. Lloyd maintains that there is room for research in this direction. On the other hand, might they not be the cause of the rather common fruity taste of the cheese in this province? This is likely enough.

Ropy milk bacterium.—Mr. Lloyd studied its influence on the quality of

the cheese and found that it has none that is bad. It must be noted that, according to Duclaux, these bacteria secrete casease.

Mouldiness of Cheese.—According to all observations, mouldiness on the surface of the cheese is not an indication of the bad quality of a cheese. Cheese of good quality is an admirable ground for the development of the *penicillium glaucum*. A cheese which very easily becomes covered with mould has a chance of being a good cheese; nevertheless bad cheese also moulds.

Rennet.—Bacilli live well in rennet, which should therefore be kept in closed jars and protected from the dust of the factory. It should also be as free as possible from all microbes.

Precautions to be taken in case of accidents.—In such case, the manufacturer, should take every possible precaution. The simple contact of his hands with the infected curd is sufficient to convey the bacteria, the cause of the accident, to every object afterwards used by him.

A curd or a cheese so infected must be removed from the making room before the next day's milk comes in. Never use the whey from such cheese for next day's manufacture. This whey must be removed from the factory as quickly as possible and all vats and instruments thoroughly scalded.

Origin of the taints.—Mr. Lloyd notes the following :

1. The atmosphere ;
2. Impure water given to the cows ;
3. Teats and udders of the cows ;
4. Hands of the milkers ;
5. Implements and utensils used in milking, dishes, cans, &c ;
6. The flies ;
7. Uncleanly milking.

In support of this, he cites some curious facts :

In the first place, the ground selected for milking is not always clean.

The cows are milked daily in the same place. The droppings of the cows accumulate in such places and dry there; the wind raises the dust which falls into the milk cans, &c. It is well known that nearly all the microbes, which occasion the accidents mentioned, come from the intestines of the cows and consequently accumulate in their droppings. It is essential therefore that the milking place should be kept in a state of the utmost cleanliness.

The water, which the cows drink, should be as pure as possible. They often drink out of small brooks or pools. They usually drink every day at the same spot and the water there is contaminated by their excrements. They often go into the water to the middle of the brook or pool; the water splashes upon their udders and teats and dries there and when they are milked, the microbes fall into the milk. These brooks are often fouled by the sewage of neighboring houses. Mr. Lloyd discovered that the great difficulties now experienced in making Cheddar, in districts where it was formerly made very easily, arise from the greater density of population and the contamination of the water courses by the sewage of the houses. He supplies on this head some very interesting details.

In 1892, 1893 and 1894, the Dairy School was transferred to farms where it was almost impossible to make good cheese. This was attributed to the nature of the soil and the grass. But the soil was analyzed and the grass examined, and nothing abnormal was found.

In 1892, Mr. Lloyd observed that the infection of the cheese occurred whenever the wind blew from a certain quarter and he finally discovered that the earthen pipe which conveyed the milk from the cheese factory to a reservoir located in the farm yard was peopled by bacilli of all kinds and that, when the wind blew towards the mouth of the pipe, it pushed back into the factory the air loaded with bad germs. This defect was remedied and all the accidents in the manufacture disappeared.

In 1893 and 1894, it was discovered that the cause arose from the water used by the cows. This was remedied and all trouble ceased.

At Long Ashton, one day, in 1893, the cheese turned out very spongy. In seeking the cause, it was found that the cows had access to a yard adjoining the farm yard in which there was a pool of stagnant water.

They got twice into this yard and on both occasions, the cheese was spongy. To be more assured of the cause, the water was examined from the bacteriological point of view and the microbes of the spongy cheese were found in it. Some time afterwards, the accident was repeated, though the cows had been unable to again get into the yard in question, the necessary precautions having been taken to prevent them and the cause was sought elsewhere.

On the farm, there were two fields known as the Hop and the Mead and situated on the slope of a hill, on top of which were several cottages known under the name of the Providence Cottages. The drainage water from these cottages went to a cistern cut in the rock, but from time to time this cistern overflowed upon the two fields in question. This happened in July and, just at that time, the cows were put to pasture on these fields, when the cheese became spongy and tainted with a smell not previously noted. After that period, the cistern was suppressed and the drainage water carried off to a distance by a special system of sewers. But they could not imagine that the cows took the trouble to ascend the hill to lick up the water oozing through the sewer pipes. However, the cheese had again become spongy and they were watched, when it was discovered that they did go up as far as that. A fence was erected to prevent them from doing so and, after that, all trouble vanished.

These facts, and many other cited by Mr. Lloyd, are of the highest interest.

We must therefore again lay stress on these two points.

Bacteria on Plants.—Mr. Lloyd was led to investigate whether plants did not carry bacteria hurtful to cheese manufacture.

Although summary, his inquiry led him to the following conclusion :

Each species of plant has, so to speak, its own bacteria or rather each kind of bacteria develops preferentially on a particular plant ; one is always surer to find certain bacteria on certain plants than on others.

Herein, says Mr. Lloyd, is a most important field for research.

Mr. Duclaux notes that in Norway and Finland, preserves of thick or viscous milk are made by rubbing the milk vessels with butterwort (*pinguicula vulgaris*) or by inserting that plant in the milk. It is probably loaded with a variety of microbes which have the property of rendering milk ropy.

3. VARIATIONS IN THE KINDS OF BACTERIA FOUND AT THE DIFFERENT PERIODS OF THE YEAR AND ON DIFFERENT SITES, ACCORDING TO MR. LLOYD.

At certain periods of the year, certain "taints" are prone to appear and to subsequently disappear.

The "taints" have a certain periodicity: thus, the vinegar taint is especially encountered in the spring, followed in the course of the summer by the spongy curd. The "fæcal taint" affects the autumn.

Some organisms are met with in some years and then disappear for a number of years to reappear during another year, and so on.

Besides this, according to Mr. Lloyd, there seem to be certain epidemics in taints, which then disappear entirely just like diseases.

There is room for investigation in this direction in this Province.

MEANS OF CONTROL

Previously to Mr. Lloyd's researches, the only means of control which we had were the senses, the hot iron test and the rennet test.

Taste, smell and touch might permit of controlling the manufacture, but it needed a long training for that and, as all manufacturers have not the senses equally developed, this method was far from being a satisfactory one to secure uniformity.

The hot iron test was introduced, but this test itself is very uncertain, for the temperature of the iron, as well as the length of the strings, is judged by the eye, which varies moreover in the case of the same acidity

according to the nature of the curd. Its introduction into the practice is therefore only a slight improvement, if it be one. Some manufacturers are very skillful in judging the acidity of the curd by this means, but the majority only draw conclusions which are more or less approximative and misleading.

Moreover, this method does not allow of judging the acidity of the milk before renneting.

The rennet test is excellent, but it only allows of one thing, namely, to judge if the milk be fit for renneting ; it is useless in the other operations.

The introduction of the acidimeter is the most progressive step yet made in this direction, for it allows of regulating the manufacture from one end to the other with great accuracy. The use of the acidimeter, however, is rather delicate and calls for much carefulness on the part of the manufacturers. The soda solution alters in time if special precautions be not taken. Then, one must be sure of the composition of that solution, as well as of that of the phenolphthalein employed.

The introduction of the acidimeter into the factories should be effected but certain investigations should be undertaken to facilitate its use and to bring it within the reach of all the manufacturers, which, I think, could be easily done.

With a practical acidimeter, any manufacturer of ordinary intelligence can be easily taught to follow his work correctly.

The Province will thus be assured uniformity and first quality in the products, as soon as the improvements to be made in the method actually followed have been determined.

The whole respectfully submitted.

GABRIEL HENRY, C. E.

CONCLUSIONS FROM THE FOREGOING REPORT.

Quebec, 30th. March, 1900.

TO THE HONORABLE COMMISSIONER OF AGRICULTURE,

Quebec.

Sir,

After studying Mr. Lloyd's report at your request and laying down a close theory of the manufacture of Cheddar cheese on the basis of all the data actually supplied by science, after comparing the two principal English systems with the system followed in this Province, there only remains to draw the practical conclusions which naturally flow therefrom for the improvement of the *average quality* of the cheese of this Province.

There were made in Quebec, in 1899, 70,493,880 lbs of cheese. If the average value of this cheese could only be increased 1 cent per lb. it would represent an annual gain of about \$790,000 00.

From what I have been able to see, I believe the thing to be not only perfectly possible at little cost, but I also believe that better than that can be done, if rational means are adopted.

In the first place, it is a recognized fact that all the cheese made either in this Province or in the United States sells, generally speaking, more cheaply on the English market than the cheese made in England.

As the system followed on this continent is, taken as a whole, about the same everywhere, and as it is, as already seen, different from the English system, the impression is strong that the abovementioned difference in prices is due especially to the difference existing between the methods of manufacture, the English system on the one hand and the Canadian and American systems on the other, and this all the more because, by means of the latter, a cheese inferior to the English cheese is always obtained, no matter what the nature of the milk used. I will revert to this subject further on.

Secondly, on its part, the cheese of the Province of Quebec as a whole brings a lower price than that of Ontario. But the causes of the second

relative inferiority are well understood. I shall speak of them also later, but in the meantime I will examine what relates to the first inferiority.

I have already explained that the English system which seemed to be inapplicable in a general way on this continent, had been modified so as to allow of handling larger quantities of milk at the same time, besides milks of very different qualities, and of accelerating all the operations of making and curing, so that the patrons might receive the price of their milk more promptly and, at the same time, that the cost of manufacture might be as low as possible.

I believe that the modifications made in the English system, although perfectly rational, have been carried too far and that the result of this slight exaggeration is in general a drier cheese than the English cheese. This would probably be one of the chief causes of the difference noted in the price, for the English experts quote the dry cheese lower.

Few analyses have been made relative to the moisture of the cheese of this Province. However, at the competition of dairy products held at St. Hyacinthe, on the 27th June, 1896, the Abbé Choquette analyzed 46 cheeses and the average of their moisture was 33.44. Remark that these cheeses were only a fortnight to three weeks old and were not yet ripe.

On the other hand, during eight years, in England, Mr. Lloyd made many analyses of ripe cheese, that is to say, at least three months old, the average moisture of which was 35.58 %. Difference: about 2 %. He also ascertained that at the moment of putting the curd to press in England, its moisture was about 41.06.

But this is not all; he made cheese according to the Scotch system, which resembles ours greatly, and found that the moisture of the curd, when put into the vats, was only 37.60 instead of 41.06 which it should be when the cheese is made by the English system: difference, 3.46.

This difference is of the same order as the previous one. Further, experts decided that the drier cheese was not so good.

We have therefore a well characterized difference due to the system of manufacture.

Wherein lies the defect of our manufacture? That is the question. There is strong reason to think that it is to be looked for in the working, which is done at a higher temperature than in England, and in the use of a great quantity of rennet, perhaps also in the quality of the rennet employed, but these are only probabilities which must be verified.

For the purposes of this verification and these researches, a series of successive tests should be made and the results examined. But this mode of proceeding would certainly be long and lacking in certainty and all the more because we are ignorant here of what good English Cheddar is and a year or two of delay in the improvements might entail a considerable loss upon the Province, considering the enormous quantity of cheese which it annually manufactures. This is moreover the means that has thus far been used to build up our system of manufacture and to bring it to the point which it has now reached; at present, something more precise is needed.

In order to be in a position to correct the defect or defects in question, I think that the first thing to be done is to get to know them thoroughly; the best way to do this, I believe, would be to go and study and observe them on the ground itself where the cheese is consumed, that is to say, in England. Once we ascertain where we stand on the subject, we could consider the propriety of modifying our method and this could be done by a correct hit at the start.

But, to be efficacious, the investigation should be conducted methodically. Here is how I think we should proceed, following the example of what Mr. Lloyd did in England:

A skillful manufacturer, well acquainted with our method, should be selected in the Province. This manufacturer should, in addition, possess a sufficient knowledge of physics and chemistry to follow his work scientifically: he should especially be very expert in the art of judging cheese. With this manufacturer, there should be associated a man who understands the acidimeter well and who knows how to sample. He should be thoroughly acquainted with the theory of the making of Cheddar and know the details of the practice. He should also know how

to judge the cheese and have the requisite knowledge of physics and chemistry to be able to note all the specialties of the manufacture, besides having a general knowledge of bacteriology.

The reason for the necessity of having two men to conduct these researches is because, in general, it is almost impossible for a practical man to be at the same time one of theory ; this is a fact demonstrated by experience and especially as regards the cheese-makers of this Province ; and what serious work could be undertaken in the direction referred to either by a manufacturer without theory or a theorist without practice ? Mr. Lloyd thoroughly understood this when he associated himself with Miss Cannon in England.

Moreover, when a manufacturer is busy at work, it is altogether impossible for him to follow up physically and chemically all the details of the manufacture and to note all his observations ; the use of the acidimeter is too delicate for that.

For this work, two men are absolutely required ; but they would not complement each other unless they both had in common a certain amount of theoretical and practical knowledge, in order to be able to understand each other and to come to an agreement together.

They should be got to make cheese during a fortnight in a factory in this Province, so as to have a complete lot of the same and they should follow the standard system of the country.

The manufacturer should work independently of the chemist and base himself only on the ordinary rules of practice. On the other hand, the chemist should make all the acidimetric readings and other observations and note all the particulars of the manufacture, without imparting anything to the manufacturer for his guidance.

Samples of the milk should be sent to the official laboratory at St. Hyacinthe to be analyzed there from the standpoints of the casein, the fat, the lactose ; samples of the curd should also be analyzed for the moisture.

The cheese so made should be cured according to the local method

and sent to England. Before shipping, samples of it should be taken and analyzed at St Hyacinthe.

This being done, the two men should then go to England to compare their cheese with the English cheese in the presence of English experts.

They should next go to the place where the Travelling Dairy School, conducted by Mr Cannon and Miss Lloyd may be. arrangements having been previously made with them as well as with the cheese experts. The manufacturer would learn the Cannon system, manufacture cheese from the milk of the same day according to that system with a part of the milk, and, according to the system of the Province with the other part. The chemist would make his acidimetric and other observations and note all the particulars of the manufacture. Later, when cured, these cheeses would be compared with each other and with those made in Canada, and judged in the presence of experts.

After this, our men should visit the Cold Storage, on the arrival of Canadian cheeses, in order to examine the latter and thoroughly grasp their defects.

Careful notes should be taken on the subject, as well as on the way in which the retail trade is carried on and on the state of this cheese, when cut, and this in comparison with the English cheese.

Armed with this information, it would certainly be easy to state wherein lies the inferiority of our cheese and to apply a sure remedy as far as the nature of the milk and the economic conditions of the factories of this province will permit. We would at least get experts thoroughly knowing the difference between the Canadian and the English cheese, which would be an important point gained.

So much for the defects of the Canadian system; I will now refer to the inferiority of the cheese of this Province to that of Ontario.

The principal causes of this inferiority are perfectly well known and are :

1. Milk badly cared for, leading very frequent to accidents in manu-

facture, defects in the aroma and flavor and a considerable want of uniformity in the lots of cheese. The Province annually suffers great losses in this respect ;

2. Bad curing of the cheese ;

3. Irregularity owing to the foregoing and other causes in the quality of the cheese of a same factory and in the quality of the different lots. This necessitates classifying on the part of exporters and infuses uncertainty into the transactions, which they contend against by reducing a little the purchase prices at the factories.

The remedies for these defects would be :

1. To call more strongly the attention of the farmers to the importance of taking good milk to the factories, as a good manufacturer cannot make good cheese out of bad milk. The way to obtain good milk, as well as the cause of the accidents in manufacture, are now fully known ;

2. To improve the curing rooms. (This has already been undertaken by the Government.) ;

3. To supply manufacturers with means of control, to enable them to follow their manufacture in a manner alike simple and sure. This is important. I have treated this question in detail in my report. The use of the acidimeter should be made practical and general.

Easy and sure tests and milk of a quality as regular as possible would, with a rational system of manufacture, enable us to supply uniform and first quality products to the trade. This question of tests should also be studied in England and discussed with Mr. Lloyd himself.

The question of the rennet should also be elucidated.

The mode of manufacture followed in the Province has certainly made considerable progress within late years : it is well suited to the country ; if there be any thing to object to in it, it is, perhaps, that it exceeds the limits of rapidity and economy in the manufacture, limits within which it should wisely be kept.

What now remains to be done is :

1. To make it thoroughly up to date ;
2. To supply manufacturers with sure tests ;
3. To make this standard system of manufacture known all over the province.

The best way to make it uniformly known would certainly be through the dairy schools and the inspectors.

In the rural districts, young manufacturers cannot, generally speaking, properly understand a study on cheese-making unless it be explained to them in front of a cheese-vat. Practical demonstrations are needful ; this is a matter of experience.

The teaching must emanate from a centre known to all the makers and to which they can apply in case of difficulty.

But, for such teaching to inspire confidence, it must be invariable and sure, and be given by competent men not only from the theoretical, but still more so from the practical standpoint ; hence the absolute necessity of continuing the improvements by definitely settling this question of the system of manufacture and of tests.

Such, Sir, are the practical conclusions which are forcibly arrived at by the careful study of the making of Cheddar and the needs of this Province in that respect.

Taking every thing into account, the projected improvement appears moreover to be one much less expensive to the Government than would seem at first sight ; but, for this, the proper means must be taken.

The whole respectfully submitted,

GABRIEL HENRY.

RESULT OF THE RESEARCHES AND EXPERIMENTS MADE
BY G. HENRY AND E. BOURBEAU.

The aim and plan of the researches undertaken by us are well set forth in the foregoing pages. It is, however, necessary to still further specify them before going into the details of our experiments.

In the first place, it is a certain fact that in the Province of Quebec and by the method of manufacture actually pursued and advocated therein, as good Canadian cheese is made as in Ontario although the lots are not so regular. The cheese made by us at the Dairy School of St. Hyacinthe and at L'Ange Gardien, in the County of Rouville, before our departure and with an eye to our researches, were judged to be of good quality as Canadian cheese. But there is a great difference between the true Cheddar and the Canadian article and, in many parts of England the consumers' taste is not the same as in Canada. As in England there is a difference of 3 to 5 cents in price between these two kinds of cheese, which difference is moreover warranted by the difference in the characters of the two kinds of cheese, it is perfectly natural that we should seek to imitate the true Cheddar.

The object of our researches was therefore, not to ascertain whether the method actually pursued in this province yielded a Canadian cheese of as good quality as the best cheese of the same kind manufactured in Ontario or elsewhere, but to find out if it would not be possible to turn out here a good imitation of the genuine Cheddar, in order to get the benefit of the whole or part of the difference of price above noted; and, in the event of the negative, to learn whether it would not be at least possible to make some modifications in our present method of manufacture that would enable us to make a cheese coming nearer to the Cheddar than the actual Canadian cheese and to thus gain a part of the difference of 3 to 5 cents above mentioned.

To settle this question, the mission entrusted to us involved two very distinct parts: a technical part and a commercial part.

The technical part was to include :

1. The manufacture in Canada of several lots of cheese made according to the English method and the others by the Canadian method ;
2. The manufacture in England of other lots by the same methods ;
3. The examination of these cheeses by experts in England ;
4. The study, at the leading centre of Cheddar manufacture in England, of the Cannon system and the application of the acidimeter as the test of that manufacture.

The object of these experiments was to demonstrate the influence of the nature of the milk and the climate on the quality of the cheese, as well as that of the system of manufacture followed and the possibility of making real Cheddar in the Province.

The commercial part of our mission comprised :

1. The examination of a great many first quality Cheddar cheeses to enable us to form an accurate idea of the distinctive characteristics of good English Cheddar ;
2. Enquiry into the differences of price existing between the English, Canadian and other cheese on the different markets and into the causes of these differences ;
3. Chief defects objected to in our cheese by the importers ;
4. The principal districts and modes of sale of our cheese by wholesale and by retail and the qualities demanded in such districts and by the markets supplying them.

All this information had to be obtained in order to properly determine the requirements and wants of the trade on the different markets, so that, in this Province, measures might be taken to meet these and to secure the highest prices on these markets.

1.—TECHNICAL PART

1. *General Sketch of the Experiments.*—Five lots of cheese were firstly manufactured between the 28th May and the 1st June at L'Ange Gardien, County of Rouville, in Mr. E. Bourbeau's factory and then eight other lots between the 5th and the 30th June, at the St. Hyacinthe Dairy School

Mr. E. Bourbeau acted as manufacturer and Mr. G. Henry as chemist. Every day, the temperature and the acidity of the milk and the whey were taken and all the information necessary to properly establish the conditions under which each cheese was manufactured, was collected.

Although, in the case of the first nine lots, the general method followed was the same, nevertheless slight modifications were made daily in the acidity of the whey during manufacture, so that, as the result of the examination to be made later by the English experts, some indications in regard to the influence of the acidity on the quality of the cheese might be had, apart from the other results. The three last cheeses, those of the 12th, 17th and 20th June, were made according to a method coming very near to the Cannon method, as described in Mr. Lloyd's report, and as far as the plant at our command permitted.

Two cheeses from each of these lots, 26 cheeses in all, were selected and cured at a suitable temperature and then shipped to England.

The object of this first operation was :

1. To properly determine the results to be expected from the method practised in this province ;

2. To ascertain whether there would be a greater resemblance between our cheese and the real Cheddar by following a method coming nigh the Cannon system and whether the character of our cheese depends on the quality of the milk and not on the method followed or upon both together and to what extent.

To complete this information, the milk of eleven of the lots was analyzed by the Abbé Choquette at the Official Laboratory at St. Hyacinthe. Eleven samples of the curd, taken at the moment of renneting, were also analyzed for the moisture which they contained.

On arriving in England, we placed ourselves in communication with Mr. F. J. Lloyd, through whose kindness, we were admitted to follow the courses of the Vale Farm cheese-making school, near Bath, in the county of Somerset, the centre of the Cheddar manufacture.

The directress of this school is Mrs. Sage (*née* Miss E. J. Cannon,) who was associated with Mr. Lloyd for the investigation which he carried on for eight years on the head of the manufacture of Cheddar and the results of which form the subject of his interesting report.

Upwards of £2,000 in prizes have been won by Mrs. Sage and her mother at different shows and competitions in Cheddar. Mrs. Sage's assistant is her sister, Miss Emily Cannon.

The experience and reputation of these two professors are certainly the best guarantee that can be had in favor of the teaching of this school. We owe our sincere thanks to Mr. and Mrs. Sage for the kind reception they gave us. We followed the courses for a week. We asked permission to make cheese there according to the Canadian system, at least during one day, and it was very obligingly granted to us by the board of directors of the school. Our object in this was to ascertain if with our method and English milk, we could obtain a cheese similar to the Cheddar. As will be seen, the cheese thus made was not the same as the Cheddar made by the Cannon system and its flavor was very different, which at once shows clearly the influence of the system chosen.

In the latter work, we proceeded exactly as in Canada, taking the same acidities with the same acidimeter which we brought with us. In this way, the observations might be comparable. We next chose six cheeses of two different, but consecutive days; three made by the Cannon and three by the English system. These cheeses were suitably ripened and sent to London to be there examined by the same experts and at the same time as those we made in Canada. The analyses of these cheese was made by Mr. Lloyd.

The following table sums up all these experiments, together with the analyses of the milk and the curd.

Following this table will be found the detailed reports of Mr. F. J. Lloyd and Miller Bros, the experts who examined our cheese. Mr. Miller is an importer of Canadian cheese and could give useful advice relative to the market value of our cheeses and the qualities and defects noticed therein by the trade, while Mr. Lloyd, as the expert chemist, could enlighten us on the probable causes of the defects remarked. The judges examined the cheeses without consulting each other and without taking cognizance of the way in which they had been made. These reports therefore were made in a wholly independent manner. As will be seen, these experts found themselves in accord.

REPORT OF MESSRS MILLER BROTHERS

Dealers and Importers of Cheese

16 Tooley Street, London, S. E.

September 29th 1900.

Dear Sir,

M. B, 26 Boxes Cheese, ex. SS. "Devona."

We have carefully examined the above cheese and consider them on the whole a very good parcel, especially considering the early date at which they were made; they have kept exceedingly well and out of the 13 we inspected, only two, in our opinion, showed any trace of unpleasant flavor. For the London market, we prefer a cheese not quite so white and they hardly show enough quality to please the bulk of our traders. The cheeses were exceedingly well made and close-cutting, but there was too much acid in them.

To give a particular report on them we would say that numbers 8 and 13 were distinctly too acid. No. 5 pleased us the most, and after that, numbers 6, 7, 10 and 12; No. 13 was very clean in flavor, but the quality was poor, No. 11 we should consider sour. No. 4 was a fine flaky cheese, but showed a little tendency to break, which is an objection to the retailer when he gets it upon his counter. No. 2 and 3 were a little off flavor, especially No. 3.

TABLE OF EXPERIMENTS.

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44			
Month	Date	Nature of the method employed.	No of the cheese	ANALYSIS OF THE MILK					Density by the lactometer.	Fat by the baler, etc.	Acidity of the fresh milk.	Quantity of ferment used.	RENNETING.			Recount test.	CURTING.		COOKING.				Time of rising.	Acidity at rising.	Hot in a test.	DRAINING.		TURNING AND ROLLING.		CURTING.		SALTING.		Time of vatting.	Humidity of the curd.	Time of taking the milk from the press.	Acidity of this whey.	Quantity of milk employed.	ANALYSIS OF RIPE CHEESE.			Temperature of the room at the beginning and end of the week.		REMARKS.				
				Water.	Fat.	Lactose.	Cazen, albumin, mineral salts.	Time.					Quantity of rennet used.	Temperature at the renneting.	Acidity.		Time.	Acidity.	Time of beginning of cooking.	Time of end of cooking.	Temperature at end of cooking.	Acidity at end of cooking.				Time of close of draining.	Acidity at close of draining.	Time of first turning.	Number of turnings.	Time of rolling.	Time.	Temperature.	Time of salting.						Quantity of salt used.	Humidity.	Acidity.				Fat.	Morning	Evening	
		L'Ange Gardien		%	%	%	%		%		none.	8h-4	2½	86	23	11½"	8½h	17.6	8h-40'	9h-20'	102	18	11h-4'	31½	3	11h-30'	44	12h-27'	5	2h-5'	2h-50'	94°	3h-00'	0.25	3h-25'	38.5	3h-45'	137	79	{ Bad milk, stormy weather. The sample of whey from the press was collected 20 minutes after putting to press. Bad milk, stormy weather.				
May	28	Canadian	1	87.64	3.52	5.45	3.39	20	none.	8h-4	2½	86	23	11½"	8½h	17.6	8h-40'	9h-20'	102	18	11h-4'	31½	3	11h-30'	44	12h-27'	5	2h-5'	2h-50'	94°	3h-00'	0.25	3h-25'	38.5	3h-45'	137	79	{ Bad milk, stormy weather. The sample of whey from the press was collected 20 minutes after putting to press. Bad milk, stormy weather.				
"	30	do	2	87.76	3.49	5.40	3.35	32.5	3.9	50 lbs.	8-37	2½	86	24	10½"	9h-4'	16½	9-23	10-14	102	20½	11.5	29	3	11-22	42	12-0	5	1-37	2-00	95	2-20	0.25	2-45	39.61	3-00	121½	5200	33.80	4.5	67	74				
"	30	do	3	87.77	3.50	5.55	3.21	32.6	3.9	60	8-11	2½	86	22	11"	8-45	16½	9-05	9-58	102	21½	10-25	29	2	10-45	42	11-25	6	1-22	1-55	94	2-10	0.25	38.10	2-55	123	5300	35.00	4.6	66	74				
"	31	do	4	87.78	3.45	5.57	3.20	32.0	3.9	21½	65	7-50	2½	86	8-25	17½	8-43	9-28	102	20½	10-00	26	3	10-20	43½	10-54	6	10-40	1-05	0.25	1-40	2-30	123	5300	34.30	5.0	68	76				
June	1	do	5	87.67	3.46	5.62	3.45	31.5	3.9	none.	7-10	2½	86	21	17"	7-45	14½	8-10	8-50	102	18	9-47	26	10-05	39½	10-25	6	1-08	2-00	0.25	2-35	39.00	3-00	105	34.65	4.4	74	91				
		Dairy School																																														
"	5	Canada	6	87.30	3.63	5.51	3.56	4.2	do	7-55	2	87½	20	17"	8-27	14½	8-45	9-04	102	11-37	23½	3	11-42	32½	12-10	9	2-43	0.275	38.00	3-45	103	2211	31.80	5.0	75				
"	6	do	7	87.27	3.63	5.58	3.52	4.2	21	do	8-14	2	87	22	15"	8-55	14½	9-05	9-34	102	16	11-42	23½	3	11-52	31	9	2-53	3-07	3-55	0-275	4-20	39.00	4-30	84½	1894	31.40	4.5	38.47	84	84				
"	7	do	8	87.26	3.65	5.44	3.55	31.5	4.2	do	8-00	2	86	20½	10"	8-25	15½	8-35	9-10	103	19	9-40	24	4	10-05	35½	10-20	9	1-10	1-30	91	2-15	37-40	2-40	116	2010	31.20	4.4	82	82					
"	8	do	9	87.41	3.56	5.48	3.48	30.8	4.2	do	8-14	2	86	19	12"	8-42	14	9-02	9-37	14	11-08	25	11-19	33	11-30	9	1-40	2-5	95	2-30	39.00	4-30	98	2003	31.80	4.2	37.33	82	82	Gassy milk			
"	9	do	10	87.33	3.60	5.50	3.50	31.8	4.2	do	7-57	2	86	19½	12"	8-32	16	9-10	10-12	27	4	10-20	43	10-44	2-00	39.43	2-20	106	2259	32.55	4.0					
"	12	English	11	87.74	3.55	5.62	3.00	31.4	4.2	17	22 lbs.	9-18	67 c.c.	84	20	10-33	14½	10-45	11-15	100	18	11-45	22	2½	12-11	33	5	2-55	96	3-22	3-40	41-20	4-20	117	1498	33.00	4.0		
"	19	do	12	31.4	4.2	19	none	7-56	67 c.c.	84	19	8-41	14½	8-52	9-00	100	15	9-55	22	10-20	33	10-34	5	1-56	92	2-15	0.298	2-45	2-55	111	1509	34.45	4.3	111 is the average acidity of the whey which flowed from the press during 30 minutes.			
"	20	do	13	30.9	4.0	21	do	7-53	67 c.c.	85	21	8-29	16½	8-40	8-55	100	18	9-25	22	9-45	32	10-05	4	12-45	1-05	1-20	0.30	2-00	2-15	1331	34.20	4.3				
		Vale Farm																																														
Aug.	9	English	14	31.0	19½	10 lbs.	7-59	4 oz.	84	19	8-53	10-8	11-10	93	17½	11-30.	23	3lbs-9	3-50	1500	38.85	2.3	32.38						
"	10	Canadian	15	17	40 lbs.	8-05	4 6 oz.	85	17	9-03	12½	9-42	10-30	100	11-45	19	12-00	30	12-15	8	2-45	2-55	3-00	3-30	81½	1535	34.60	1.7	33.64						

The cheeses were well boxed, this is an important matter, the eye is attracted before the palate is reached.

Yours faithfully,

(Signed) MILLER BROS.

REPORT OF MR. J. F. LLOYD.

Expert Chemist

6, Trinity Square, London.

Dear Sir,

The cheeses were examined in the following order, and these notes made at the time :

No. 13. Good flavor, dry, slightly open, not A. 1.

No. 12. Solid, better flavor, not so ripe, slightly acid.

No. 11. Good flavor, but too acid. Dry.

No. 10. Better flavor. Not so acid.

No. 9. Not soft enough, better flavor, more mild, but still acid

No. 8. Good aroma, distinct flavor, too dry, too acid.

No. 7. Better aroma, too solid, dry flavor, not so good as aroma would lead you to expect, not so acid.

No. 6. Slightly dry and crumbly, good flavor, not too acid, but does not cut fat. This one of the principal faults. Good aroma.

No. 5. Best flavor, not so dry, slightly acid, cuts well.

No. 4. Much milder, more flaky, not much aroma nor flavor, dry, lower acidity.

No. 3. Off flavor, poor cheese, shows moisture when cut.

No. 2. Smells acid, off flavor, think there was taint in milk.

No. 1. Firm make, soft and more acid than No. 2, but better cheese.

The general impression left on my mind by this examination was, first, that the cheeses did not possess the character of the true English Cheddar. They had not the characteristic flavor, the cause of which is yet undiscovered. They were too solid, did not cut sufficiently fat, and were not mild enough. No. 5 was the best cheese, and the nearest approach to English Cheddar.

Samples of twelve of these cheese were taken for examination and the following are the results obtained :

No	Moisture	Acidity
2	33.80.....	4.5
3.....	35.00.....	4.6
4.....	34.30.....	5.0
5.....	34.65	4.4
6.....	31.80.....	5.0
7.....	31.40.....	4.5
8.....	31.20.....	4.4
9.....	31.80.....	4.2
10	32.55.....	4.0
11.....	33.00.....	4.0
12.....	34.45.....	4.3
13.....	34.20.....	4.3

I wish particularly to draw your attention to the fact that while No. 5, the best cheese, contains 34.65 per cent of moisture, while No. 3, which contains 35 per cent was, as my remarks when tasting the cheese show, too moist, for I noted then that it shows moisture. This raises an important question. Can it be that a difference of 0.35 per cent of moisture can make all this difference in the quality of the cheese, or may it not be due rather to the condition in which this moisture exists? I am of opinion that the latter is the true explanation. If the moisture exist in the curd itself, it helps to ripen, mellow and soften that curd. But, if by pressure

applied to the curd, the moisture exudes from that curd so as to fill the crevices between the lumps of curd, two injurious effects result. The lumps of curd are left too dry and do not contain within themselves the means of ripening, while the drops of accumulated moisture (whey) undergo rapid change, develop undue acidity (so contracting the curd in their immediate neighbourhood) and subsequently proceed to develop butyric acid, producing bitterness. Thus the cheese consists of a mixture of unripe curd and over-ripe whey. The object of pressing is to bring the minute pieces of curd together and to press out the atmosphere. To ensure this, pressure must be gradual so as to give time for the air to escape, and the less moisture which comes from the curd during this period of consolidation the better. Having got rid of the air, then pressure may be increased so as to solidify the curd. Even this must be done with care and there is a limit to the pressure which should be applied. Excessive pressure then tends to go beyond the true object of pressing, which, as I have said, is merely to solidify the curd, and in such case the curd becomes compressed or forced into a smaller compass than it should by rights possess.

Now a wet curd will resist any such attempt at compression more than a dry curd. If then the practice of applying too much pressure to the curd is in vogue, there will also be a constant tendency on the part of the maker to produce a dry curd which will submit to this compression.

I cannot but think that Nos. 6, 7, 8 and 9 are typical examples of this tendency. I have found that the average percentage of water in ripe Cheddar cheese of good quality is 35.58 (see Government Report, p. 123.) No wonder then that No. 6, 7 and 8 struck me when tasting them as far too dry.

It is, I think, evident that the aim of the Canadian maker must be to produce a moister curd and yet to so treat it as to prevent the fault visible in No. 3.

As regards the acidity of the curd, the figures afford at present no evidence of importance.

In two of the cheeses, I determined the percentage of fat, viz: No. 7, which contained 38.47 per cent, and No. 9, which contained 37.33 per cent. This is a very high proportion of fat, and I have always found that when making cheese from very rich milk special precautions have to be taken. It is, however, remarkable that in spite of this large proportion of fat, the cheeses do not on the iron show their quality. This ought to be remedied, for the quality is there, and the means of showing it, so that the goods might obtain the price which they ought to fetch, should be found.

I also examined the two cheeses made at the Vale Farm. The results were as follows:

	Moisture	Acidity	Fat
Cannon	38.85	2.3	32.38
Bourbeau	34.60	1:8	33.64

It will be seen that in the method of make adopted by Mr. Bourbeau at Vale Farm, there is a distinct tendency to obtain a curd containing far less moisture and less acidity than is obtained by Miss Cannon.

Now it may be taken as a general maxim that for ripening cheese, in a definite period, the moisture and acidity should be in inverse relation: if the moisture is low, the acidity should be relatively high and *vice versa*,

The proportion of fat in the Bourbeau cheese is not so high as it should be for the lower moisture. By calculation, it should be 61.15, 65.4: 32.38, 34.63.

It would therefore appear that a certain amount of fat had been lost in the whey. I think this matter worthy of further investigation.

(Signed) FRED. J. LLOYD.

The two cheeses 14 and 15 made at Vale Farm, in England, were brought back to Canada in November and analyzed at the Official Laboratory at St. Hyacinthe by Abbé Choquette. The voyage did not harm them and they arrived in good condition. The following is the result of this analysis: No. 14 was made by the Cannon system and No. 15 by a system approaching the Canadian system.

	No. 14	No. 15
Water.....	37.80	34.18
Fatty matter.....	30.73	30.30
Proteinaceous matter soluble in cold water.....	9.72	9.25
Proteinaceous matter insoluble in cold water.....	19.25	23.45
Salt.....	2.50	2.82
	100.00	100.00
Volatile acids (in milligrammes of soda per gramme of cheese).....	9.60	9.52
Aroma of the volatile acids :.....	Pretty agreea.	Less agreeabl.

These analyses show that No. 15 ripened less rapidly than No. 14.

It now remains to draw the practical conclusions from these experiments and reports.

Canadian Milk and English Milk. — If we take the average of the analyses made by Abbé Choquette of the milks which we used and if we compare it with that of the milks used during the same months, May and June, by Mr. Lloyd and during the eight years that his experiments lasted, we find :

	Water.	Fat.	Lactose.	Caseine-Albu- mine. — Mineral Salts.
Canadian milks.....	87.54	3.55	5.49	3.39
English milks.....	87.60	3.37	5.33	3.68

These figures indicate only a trifling difference which is in line with the differences generally existing between two milks of the same quality.

According to these analyses, therefore, the May and June milks would be the same in the St. Hyacinthe district of this province as in the Bath district in England.

With respect to the acidity of the milks in the morning, when they are mixed in the vat, the table shows that it is about 20. The weakest was 17 and the strongest $21\frac{1}{2}$. This is about the same acidity as that of the English morning milks after they have been mixed with those of the evening. Under this head, therefore, we do not find great difference either. In England, the milk is received in the vat both in the evening and morning. The evening milk is kept during the night at a determinate temperature; in the morning, the morning milk is mixed with it. (See Cannon system at the end of this report.)

General Conclusions from the Experts' Reports.—If we examine the reports of the experts, the first thing that strikes us is that the Canadian cheese, compared with the genuine Cheddar, is, in a general way, *too dry, not unctuous enough, too acid and has not the same flavor*. There is another point relative to which we have had complaints. This is the keeping quality. A certain number of importers have complained that the Canadian cheese does not keep long enough. As this defect depends upon the preceding ones, it is right that it should be arrayed with them here. It is these four things especially which constitute the difference between these two kinds of cheese.

To begin with, some explanations are needful on this subject and all the more so that the trade has very often raised the objection that our cheese is too moist and it is essential that there should be an understanding on this head.

The dealers in English Cheddar, when examining cheeses, pay great attention to the appearance which the surface of the tryer presents when it is withdrawn from the cheese. In this examination, they very often substitute even a flat bodkin. They stick the bodkin into the cheese withdraw, smell it and examine the surface. To the nose, the aroma should be very pure; the bodkin should be covered with a fatty coating, but show no beads of moisture. In this case, they say: "The cheese does cut fat." This is a quality. If on the surface of the tryer there be small beads of moisture, they say: "The cheese shows moisture." This is a grave defect. English cheese is judged only after it is two months old.

When some cheeses are cut, they show a firm and compact, but friable and crumbling body; the surface of the cut does not present a uniform color and the cementing together of the pieces of curd can be distinguished. After a certain time of exposure to the air, it dries up, cracks and the pieces of curd separate and crumble. If the tryer be driven into it, it comes out free from greasy covering. The cheese does not show its fat. This is what is called in England cheese that is too dry. In other cases, the tryer comes out of cheese of the same nature covered with beads of moisture; such cheese, although firm, is then said to be too moist. In other instances, the cheese is soft and sticky and also shows moisture on the tryer. Cheeses with these defects are also said to be too moist.

The body of a cheese may be firm and compact, with a tendency to crumble, yet, while being firm and compact, it may also be soft and unctuous.

A cheese may hold relatively very little moisture and be rich in fat and yet show its moisture and not its richness in fat on the tryer; and reciprocally a cheese may be very moist and yet not show too much its moisture on the tryer.

In a good Cheddar cheese, the moisture is intimately incorporated and combined, so to speak, with the paste, but is not imprisoned between the pieces of curd more or less well cemented to each other.

The paste of Cheddar may contain 38% of moisture, without revealing it to the tryer, while cheeses are frequently met which contain only 33 $\frac{2}{3}$ % and less, and which nevertheless show their moisture very strongly.

The cheese No. 14 of our experiments at Vale Farm contained 38% of water, which is a good deal more than very good Cheddar; yet the moisture did not show itself too much by the tryer, while it did so in the case of No. 3, which only contained 35%.

In the true Cheddar, the paste is firm, but supple, soft, unctuous, mellow and very uniform; the tryer comes out of it showing fat, but no beads of moisture. The pieces of curd are no longer discernible in it, as they are not

only well cemented, but fused together. This paste rather recalls that of good fresh Gruyère.

In a system of manufacture, what are the defective points which prevent it from showing its richness in fat, but not from showing its moisture? We propose to look into this now.

1. *Moisture*.—If we refer to the table summing up our experiments, we note in the first place that there is no well marked relation between the moisture left in the curd before *putting to press* and that of the ripe cheese. This is easily understood, for, with the presses actually in use in this Province, it is impossible to know exactly the importance of the pressure applied to the cheese and there are some curds which yield their whey to the press more readily than others. Neither is the conduct of all curds the same at salting, some of them giving up more of the whey at the moment of salting than at any other. Then there is the evaporation of the moisture during curing, which is not the same with all cheeses.

These are the chief causes of the want of relationship between the percentage of moisture before putting to press and the percentage after curing.

But the system of manufacture pursued influences very considerably the moisture of the ripe cheese, whatever may be the mode of pressure applied. According to the averages established by Mr. Lloyd, good Cheddar, once ripe, should contain about 35.53% of moisture and the cheese made by the Canadian system contains on an average a much less proportion. In fact, the cheese which we made by the Canadian system at L'Ange Gardien and at the St. Hyacinthe Dairy School, as well as at Vale Farm, contains an average of 33% ; those made according to the Cannon system contain an average of 35.12%. In particular, of the two cheeses made at Vale Farm, that made according to the Cannon system contains 38.85% and that by the Canadian system only contains 34.60%.

On his part, Mr. Lloyd had already made careful inquiries into this subject, by using the Scotch system, which greatly resembles the Canadian system and he found it also yielded cheese with a slight percentage

of moisture. We have already, in the first part of this report, (page 392) cited the result of the analysis of 46 Canadian cheeses made by Abbé Choquette, in June, 1896, and the average moisture of those cheeses was only 33.44. The influence of the system followed is therefore well defined and, if moister cheeses are needed, it must necessarily be modified. Among the successive operations of the manufacture, it is consequently not the pressing which exerts the greatest influence on the moisture of ripe cheeses. Certain curds may be heavily pressed and yet retain more moisture than others, which give up their whey very easily. On the contrary, experience has shown that the use of a large quantity of rennet and to a certain extent the renneting and the scalding at a higher temperature, yield in general drier cheeses, the same mode of pressing being employed. (See page 363 of this report). Now, as in the Canadian system, more rennet is used and the renneting and scalding are done at a higher temperature than in the Cannon system, we are forcibly led to turn our attention in the first place in this direction.

These three things, the quantity of rennet, the temperature in renneting and the temperature in scalding, each play their particular rôle; but which is the one of the three that should be modified? It is very difficult to say which to a certainty and it would be necessary that experiments should be made on the subject.

We have already, however, some notable indications. Mr. Lloyd, who made some tests to determine the influence of the quantity of rennet on the quality of the cheese, has always found that a heavy dose of rennet hurts the quality of the cheese and recommends that at least 45 minutes be taken to curdle the milk at 84°. No experiment has been made to ascertain if the temperature at renneting influenced the quality of the paste of the cheese and if it was better to raise this temperature and to use less rennet than to do the contrary. According to the foregoing, therefore, one would be led, in order to imitate the Cheddar, to proceed, even in this Province, by following the Cannon system and to rennet at 84° with a smaller dose of rennet than that actually employed in the province.

As for the scalding, we already know that if it be done at a low tem-

perature the curd is less firm than if scalded at a higher temperature and that scalding at a high temperature gives a drier curd.

Towards the beginning of this report (page 357 and following) we have laid down a theory as regards the manufacture of Cheddar, in which more detailed indications on this head will be found, but we must again make a general remark here. In the Canadian method, the whey is expelled by using a stronger dose of rennet, which imparts greater contractibility to the curd; the cooking is done at a higher temperature and more acid is developed before draining off the whey. In the Cannon system a weaker dose of rennet is used, the scalding is done at a lower temperature and less acid is developed in the whey before draining off and, notwithstanding all this, in order to attain sufficient drying of the curd, it is subjected to a certain pressure during the development of the acid. This mode of action is perhaps a little more expensive, but is it not essential in order to obtain a cheese that will not be too dry?

So much for the quantity of moisture to be left in the curd, but we have seen that, to resemble Cheddar, it is not enough that the Canadian cheese should contain a greater proportion of moisture than heretofore when once ripe but also, that this moisture should be further thoroughly incorporated with the paste so as to not reveal itself on the tryer, that the grains should be perfectly fused together and that the fat should show on the tryer.

Mr. Lloyd rightly charges the mode of pressing with part of the difference that exists between the paste of the true Cheddar and that of the Canadian cheese. In the English system, the cheese remains in press for four days. They begin at a moderate pressure, which is increased daily by changing the cheese from one press to another more powerful. In addition to this, in each press, the pressure is constant and determined, for it is regulated by weights. We took the data relative to these presses, which will be described further on. In Canada, the presses used do not allow of an exact account being taken of the pressure and the springs, against which the rats rest, gradually slacken as the cheeses decrease in length; consequently, the pressure cannot be constant. Further, in this country, the cheeses only remain in press from 18 to 24 hours generally. This

question of the pressing is of the utmost importance to the quality of the cheese and especially of the paste. When a curd is subjected to a moderate, increasing and, above all, prolonged pressure, the air is more easily expelled from it, the grains cement together more thoroughly, the excess of moisture is more readily forced out of the whole mass and the remainder penetrates and impregnates them thoroughly; there are phenomena of diffusion and osmose which come into play and which completely modify the nature of the paste and consequently the medium in which the microbes should exist. On the other hand, if the pressure be increased abruptly and become considerable after some time, the outer surface of the cheese, for a certain thickness, hardens in the first place and the air remains imprisoned in the centre of the cheese, between the grains of curd which cannot cement together properly; and the moisture itself accumulates between these grains at the same time as the air. Cheese is then obtained which shows moisture to the tryer and in which the microbes most favorable to good curing are placed in improper conditions of life.

We regard this question of the mode of pressing as of the highest importance and we cannot do better than refer the reader to that part of Mr. Lloyd's report which deals with it (page 405 of this report.) We have also remarked that the curd mill used in England does altogether different work from those employed in America. Here the curd is cut into more or less regular pieces and all about the same size. The English mill on the other hand, tears the curd, reduces it to pieces of all sizes and yields a large proportion of crumbs. These crumbs possess the advantage of properly packing all the crevices comprised between the bigger pieces and the agglomeration can be effected more thoroughly under the influence of a moderate and prolonged pressure.

2. — *Unctuousity*.—From the standpoint of the unctuousity of the cheese, here is what Mr. Lloyd says :

"In two of the cheeses, I determined the percentage of fat, viz : No. 7, which contained 38.47 per cent. and No. 9, which contained 37.33 per cent. This is a very high proportion of fat, and I have always found that when making cheese from very rich milk, special precautions have to be taken."

We may here make the following remark :

If, in a cheese, the proportion of moisture increases, that of the solids by this very fact decreases and if at the same time the proportion of fat in the cheese remain constant, the result is an increase of the fat in the solids simultaneously with that of the moisture in the cheese. With that granted, let us take the two cheeses above mentioned ; referring to the table of their analysis we see that they contain respectively 31.40 and 31.80 o/o of water and therefore 68.7 and 68.2 o/o of solid matter. As they contain 38.47 and 37.33 o/o of fat, their percentage of fat in the solids is 56.07 and 54.73 o/o.

During the years 1891 to 1897, M. Lloyd analyzed 175 good English cheeses on this point and found that the percentage of fat, as regards the solid matter, showed an average of 52.12 o/o in the case of these samples.

For the cheese made by the Cannon system during our experiments, the percentage is 52.95 o/o. This figure does not differ very much from the foregoing.

In the first place this shows that the English cheese has a slighter percentage of fat in the solid part of the paste and, secondly, that it is not only the percentage of fat which imparts to it its unctuousity, since the Canadian cheese is richer in fat and less unctuous than the real Cheddar. This involves a question of paste. It is very probable that the unctuousity depends above all on the manner in which the moisture is incorporated with the paste.

Mr. Lloyd adds to what we have above cited :—" It is, however, remarkable that in spite of their large proportion of fat, the Canadian cheeses do not on the iron show their quality. This ought to be remedied, for the quality is there, and the means of showing it, so that the goods might obtain the price they ought to fetch, should be found."

3. *Acidity*. — We have seen that our cheeses, as compared with the true Cheddar, were characterized as too dry, not unctuous enough and too acid ; we have just examined the two first differences, now let us look into the third, the acidity.

On examination of our table, we perceive that no well defined relation can be established between the reports of the judges and the acidities either of the milk or of the whey at the different stages of the manufacture in the case of the cheeses which we made in Canada by the two systems and outside of those which we made in England. We do not pretend to say that there is none, for certainly if the milk came from the press with a very strong acidity, the cheese would be more acid. We wish simply to state that the differences existing between the Cannon and the Canadian systems, to the moment of pressing and within the limits of the acidities of our experiments, do not render themselves apparent to the taste on the acidity of ripe cheese. The differences between the diverse acidities of these cheeses, when they are once ripe, were not sufficient for that; but, in a general way, they were all found too acid.

In fact, No. 9, whose milk showed an acidity of 19 at the moment of renneting and whose whey at the dipping indicated 33 and the whey from the press 98, was found as acid as No. 2, whose milk was renneted at an acidity of 24, whose whey at dipping marked 42 and whey from the press 124. Once ripe, their acidity was found to be 4 o/o in the case of the former and $4\frac{1}{2}$ o/o in that of the latter.

Since the difference between the two systems to the time of pressing does not make itself apparent to the taste, the difference in the acidity of the ripe cheeses seems therefore to arise only from the mode of pressing. And, in point of fact, nearly all the cheeses which we made in Canada were found to be, in comparison with the real Cheddar, acid in a general way, even those made by us according to the Cannon system, while those which we made in England by the same two systems did not show an excess of acidity at the judge's examination. Now, in Canada, one system of press is used and, in England, another. In Canada, we left the cheeses made by the Cannon system for two days in press, but the pressure was increased rapidly as in the Canadian method and was as heavy. In England, on the contrary, we gave a heavy pressure that very evening to the cheese made by the Canadian system, but the kind of press and the number of weights at our disposal did not allow of our putting on as heavy a pressure as with the American presses.

The difference of method employed for the cheeses made in Canada did not therefore make its influence felt upon their acidity and the same may be said of the cheeses made in England. But, if we compare the cheeses made in Canada with those made in England, the difference in the mode of pressing is noticeable. In fact, if we refer to the table of experiments, it will be found that the acidity of all the cheeses which we made in Canada, including those by the Cannon system, was embraced between 4 and 5 per cent; on the other hand the acidity of the cheese which we made in England was 2.3 in the case of those made by the Cannon system and of 1.7 in the case of those manufactured by the Canadian system. The difference between the acidity of the cheese pressed with the American press and those pressed by the English press is therefore considerable. It may be objected that the cheeses made in Canada were four months old when examined, while those made at the Vale Farm were only two months. But this certainly cannot account for the whole difference, for, in Mr. Lloyd's report, page 130, we find the following table, resulting from the numerous analyses :

	Soluble Acid
Cheese at least eight weeks old.....	1.57
Cheese from 9 to 12 weeks.....	1.95
Cheese from 13 to 16 weeks.....	2.20

According to this, the English cheese two months old would have an average acidity of 1.57 and we found an average of 2.00 for those made at Vale Farm and for the four months old an average of 2.20, while we found an average of 4.4 for those made in Canada, which is double the difference that we should have found.

A fact which further tends to attract attention to the influence of the mode of pressing on the acidity is that No. 5 was made by following about the same acidities as in England for the milk and the whey at the different stages of making; but, that, once ripe, it showed an acidity of 4.4 instead of 2.2, the English average.

The acidity of these cheeses noted by the experts is therefore real and appears to result from the mode of pressing. As we have seen, Mr. Lloyd explains the thing as follows: "If the moisture be intimately incorporated with the paste, it helps the curd to ripen and to fuse, but if, owing to the pressure applied during the pressing, the moisture exudes

from the curd, two injurious effects result, the second of which is that the acidity continues to develop in the drops of whey imprisoned between the pieces of curd.

1. *The manner in which the moisture is incorporated with the curd* ; 2. *The acidity of the ripe cheese* ; and 3. *The quantity of moisture it contains would therefore be three things intimately connected and depending, the two former on the mode of pressing, and the latter on the quantity of rennet, the temperature of the milk at renneting, that of the scalding and also the mode of working the curd to which we shall revert later on.*

4. *Flavor and aroma* — We have seen that what further differentiates the Canadian from the Cheddar were the flavor and the aroma. Suppose that we had obtained a cheese which, as regards moisture, acidity and paste was in all respects similar to the Cheddar, could we impart to it the special flavor and aroma which distinguish the latter cheese and from which the flavor and the aroma of the Canadian cheese differ a great deal, as we ascertained by the numerous cheeses from all quarters which we examined during our trip ? This question is certainly harder to elucidate than the others. However, it may be at once said that it is very probable that we shall never be able in Canada to have a flavor quite the same as that of the genuine Cheddar. Questions of climate, soil and grasses are involved, which it is impossible for us to solve.

As a general rule, the plants which grow in a certain climate and on land of a certain nature do not yield either a cheese or a butter of the same flavor or aroma as those which grow in another climate and on a soil of a different nature. The true Cheddar, like the butter of Isigny, like the Gruyère and like the Roquefort, is a special product. These may be imitated in form, texture and color, but not in the flavor and aroma and the genuine connoisseur will be always able to distinguish an authentic product from an imitation. They have each their particular flavor derived from the soil and the climate of the country of their origin.

A host of other products are encountered, which draw their special qualities from the soil and climate. Wines especially fall into this

category. For instance, Bordeaux wine has a bouquet and properties very different from Burgundy and Champagne ; it is impossible to confuse the one with the other. These properties come especially from the soil. In a same winemaking district, two adjoining fields, planted with vines of the same kind, often produce wines of very different qualities and this to such a degree that the two fields may possess very different values.

The case is the same with butter and cheese and probably also with Cheddar.

Nevertheless, even in the event of our inability to secure in this province the true flavor of the genuine Cheddar, it is very probable that we may succeed in making a cheese the flavor of which will come so near to the one we desire to reach that, in practice, our cheese will be taken for the true Cheddar except by amateurs.

For this purpose, the first thing to be done is to remove every bad aroma and bad flavor, and with this view none but clean, first quality milk should be accepted by the factories and the working should be done only in the factories where the greatest cleanliness prevails.

In England, each farm makes its own cheese from the milk of its own herd, which is generally composed of 50 to 60 cows.

The milking cans are kept in the cleanest condition ; immediately after milking they are washed in lukewarm water, then scalded, steamed and dried out of doors in the sun, in a pure atmosphere.

Before milking, those who perform this work wash their hands, put on a clean apron and wash the udders of the cows.

In the factories, the most minute precautions are taken to prevent the contamination of the milk and the most exquisite cleanliness reigns. Each implement and tub is carefully washed when no longer in use and care is taken to spill no milk, whey or curd, on the floor, etc.

At Vale Farm, where the whey of the evening before is daily used, we remarked that the curd had a slight odor of advanced whey, but this odor disappeared during the curing of the cheese.

According to Mr. Lloyd, the use of whey renders the manufacture uncertain and yet it is the general rule in England. We would also insist here on the importance of fully elucidating the question of the use of yeasts

In our table, the fact may also be remarked that, among the cheeses made in Canada, No. 5, whose flavor comes nearest to that of Cheddar, was made with a milk, whose acidity was 21 at the time of renneting and that in general all that have been made with milk whose acidity was 21 or less than 21 have a better flavor than those made from more acid milk.

Mr. Lloyd recommends from 20 to 21 as the most favorable acidity of the milk at renneting.

Might there be an interesting relation between the flavor and the acidity of the milk used and might the flavor of the Cheddar be more easily secured, with a milk whose acidity is 20 or 21 at renneting than with a milk whose acidity is greater or less? This question deserves to be more thoroughly studied.

The reader's attention cannot be too much directed to the probable influence of the mode of pressing on the flavor of the cheese. When the curd is pressed, the mode of pressing varies either in the intensity of the pressure or its duration. But the importance of the duration of the pressure is greater, perhaps, than its intensity. When a mass of curd is subjected to prolonged pressure, the phenomena of diffusion of osmose and others make their influence vigorously felt in the long run; from the heterogeneous mass which it was, it becomes homogeneous; the moisture has a tendency to spread through it regularly, together with the gases and the other soluble salts, which does not happen when the pressure is of brief duration.

It will be thoroughly understood then that the microbes imprisoned in the mass of curd find altogether different conditions of existence therein.

As the nature of the microbes which prefer to develop there, as well as the products of their secretions, depend much upon the nature of the curd in which they are imprisoned, it is easy to foresee that the curing and consequently the aroma, the flavor and the acidity of a cheese will depend on the manner in which it is pressed and especially on the duration of the pressing. It may also be added that in a cheese, from which the air has been completely expelled, anærobic life tends to take the upperhand and that therefore the casein will be quickly assailed by the anærobic ferments, the cheese thus very rapidly acquiring aroma and flavor.

We should also call attention to the fact that vatting is done at a higher temperature in Canada than in England, which may exert an influence on the agglomeration of the grains of curd and consequently on the curing. The whole of this question merits serious study.

An important observation remains to be made after the foregoing discussion: this is that we should not try to make a moister cheese in this Province without *at the same time changing the mode and the duration of the pressing*; otherwise, the result will be what manufacturers commonly call 'glue,' that is to say, a soft, acid cheese and of very bad quality.

5. *Keeping Quality.*—A certain number of English importers complain that the Canadian cheese does not keep long enough and that they are obliged to sell it off quickly.

Reference to what we have said previously enables us to fully account for the cause of this and we need only repeat here what M. Lloyd says on this subject, as follows:

"If the moisture exist in the curd itself, it helps to ripen, mellow and soften that curd. But, if by pressure applied to the curd, the moisture exudes from that curd so as to fill the crevices between the lumps of curd, two injurious effects result. The lumps of curd are left too dry and do not contain within themselves the means of ripening, while the drops of accumulated moisture (whey) undergo rapid change, develop undue acidity (so contracting the curd in their immediate neighborhood) and subsequently proceed to develop butyric acid, producing bitterness. Thus the cheese consists of a mixture of unripe curd and over-ripe whey."

This is probably one of the reasons of the defect above mentioned which will be remedied by changing the mode of pressing.

MISCELLANEOUS REMARKS

It is now necessary to make some remarks regarding certain processes in the Cannon system which may exert an influence on the quality of the Cheddar.

1. *Breaking the Curd*.—In the Cannon system, as we have seen, less rennet is used and the renneting is done at a lower temperature. Thus the curd is fit for cutting only after a longer interval of time. But the cutting is not done in one operation as under our system. Shortly before it becomes firm enough it is cut up roughly with an American knife, care being taken not to break it; then it is allowed to become firmer and the whey is allowed to rise until the curd is covered; at this moment it is generally ready for breaking. This period of rest lasts about 10 or 15 minutes. Then the curd is broken rather than cut into small fragments with a clean fracture and generally smaller than under the Canadian system. There is in this a difference in the process which may have a great influence on the nature of the curd and on the manner of its subsequent treatment. Under this system, the curd would contract with less difficulty and set more firmly; the result would be that it would not be necessary to scald it at so high a temperature to obtain the same degree of firmness when the curd is piled, chiefly because it is cut softer at the beginning.

2. *Fermentation of the curd*.—This is not done at all like in England as may be seen by studying the Cannon system which we describe further on. Nevertheless the curd, when ground, must present the same qualities to the touch, taste, smell and sight as under our system. This is another way of attaining the same end and in the other systems followed in England other means are also adopted. But in the Cannon system, the expelling of the moisture is helped by pressing the curd: it is therefore not necessary to dry it that as much acid be developed as in the Canadian system. In the latter, it is true that the curd may be more or less com-

pressed by piling the blocks to a greater or less height, nevertheless the same degree of pressure can never be attained as with a weight in the Cannon system and the expelling of the whey must be done before this operation by scalding at a higher temperature. In the Cannon system the blocks are covered with wrappers to maintain the temperature, but in the Canadian system this is more easily effected by warming the tub.

As regards the development of lactic acid under the Cannon system, the curd is first cut into rather large blocks and at each turning the blocks are cut smaller so as to expose an increasingly large surface to the action of the air. In the Canadian system, the blocks flatten out more and more, the surface exposed to the air at each turning with a view to the development of the acid, therefore, becomes all the greater. What is the advantage of the former process over the latter? There is nothing to indicate it in the results of our experiments. It would be desirable to study the question. It is nevertheless probable that as soon as the curd attains the same degree of ripeness, it matters little which of these two processes be used or the Candy process which resembles the Canadian. Mr. Lloyd says that the Candy method gives a more open cheese. Does the pressure at this stage of the manufacture exert any influence on the body of the curd and is not the method of treating the curd without compressing it, as followed in Canada, the reason for its having to be scalded at a higher temperature and of a greater pressure having to be used in press, the drawbacks of which pressure we have pointed out above?

Another advantage we can see in the Cannon system is that if some portions of the curd do not ferment quickly enough, they are at each cutting mixed up again with other portions better fermented, which does not take place in the Canadian system. A more regular fermentation must be obtained with the former. In the Canadian system, for instance, the ends of the blocks cannot ripen like the centre. It is true that at each turning, what was on top and outside is put underneath and in the centre and *vice-versa* but, in spite of this, the mixing of the various portions of the curd to be fermented is certainly not so well done.

3. *Scotch System*.—In Scotland where the milk is worked in large quantities in the factories, as in Canada, the Canadian system which is more economical, was first adopted and in 1886, an instructor was obtained from

the Province of Ontario; but it was modified afterwards to get higher prices on the market. Mr. Lloyd advised us to visit Mr. James McAdam's factory at Castle Douglass, in Scotland, where this modified system is followed. Mr. McAdam now gets as high prices for his cheese as true Cheddar. We accordingly went to Castle Douglas and Mr. McAdam was kind enough to allow us to be present at his working. Our most sincere thanks are due him for his kindness. The manufacture is carried on as in Canada in long vats with double bottoms, heated by steam.

Here is a summary of the observations taken that day :

2,200 lbs of milk.

7.40. Renneting : one ounce of rennet to 330 lbs : temperature at renneting, 83°. Curd formed in 45 minutes.

8.25. Cutting : The curd is cut softer and finer than in Canada.

8 40. Taking the acidity : 14.

8.45. Beginning of scalding.

9.25. End of scalding. Temperature 98°.

9.40. Dipping of the curd. Acidity 14.15.

10.55. Hot iron test $\frac{1}{8}$. Acidity 16 $\frac{1}{2}$.

11.05. End of draining.

11.12. Curd taken to rack. Acidity 22.

11.17. Pressing with boards and weights. Acidity 26.

11.40. First turning. Acidity 26.

12.00. Second turning. Acidity 32.

The turnings are afterwards continued every half hour until the curd is sufficiently fermented.

1.40. Weighing 216 lbs of curd.

1.55. Grinding after cooling. Same mill as at Vale Farm.

2.15. Salting with 2% of salt. Temperature of curd 74°. Under this system, the salting is usually done 6½ hours after renneting.

2.25. Vatting.

2.35. End of vatting. Acidity 80°.

The presses used are the same as at Vale Farm. The cheeses remain only three days in the press. The maximum pressure is 2,688 lbs. No temporary cloths are used as at Vale Farm. The surface of the cheese is greased on the last day.

On examining this system of manufacture we see that the curd is obtained in 45 minutes between 83° and 84°; that the curd is cut softer and finer than in Canada; that the scalding is done at a lower temperature and less acid is developed in the whey and consequently that the process somewhat resembles the English systems. The press and the curd mill are the same as at Vale Farm. The distinguishing feature between this system and the Cannon system is that the acidity is chiefly developed during the fermentation of the curd on the rack. Mr. McAdam is of opinion that the quality of the cheese is better when the acidity is developed on the rack only than when developed in the whey. During the ripening on the rack the curd is pressed with boards on which weights are placed; the pressure during this period of manufacture is less than in the Cannon system. There are also some handlings of the curd which constitute a further difference between this system and the Cannon system.

We also see that in this system the cheese is put in the press at a much lower temperature than in Canada and the pressing lasts only three days instead of four under the Cannon system. The conclusion to be drawn from this visit is that on the whole the modifications made to the Canadian system have had the result of making the Scotch system resemble those followed in England. This shows us that if we wish to

make a cheese in this province resembling true Cheddar, we must also modify our system in this direction.

4. *Clothing the Cheese.*—At Vale Farm, when the cheeses come out of the press, they are wrapped in strong linen cloths firmly sewn or tied. This is done before they are taken to the ripening room.

These cloths keep them in shape and from getting dirty. They may also be an obstacle to the development of moisture especially if care has been taken to steep them in an antiseptic before using them. They do not prevent exchange of gases and vapors between the cheese and the air.

We are inclined to recommend the use of these cloths in this Province. In England they are sewn on the cheese, but they might without difficulty be laced or some other rapid and safe means of keeping them in place might be used.

They are taken off when the time comes for selling the cheese. They might be washed, steeped in an antiseptic solution, dried and used again.

Ripening of the Cheese.—There is nothing special in connection with the curing rooms in England. They are generally built of stone, but the climate is less variable and probably damper than in our Province.

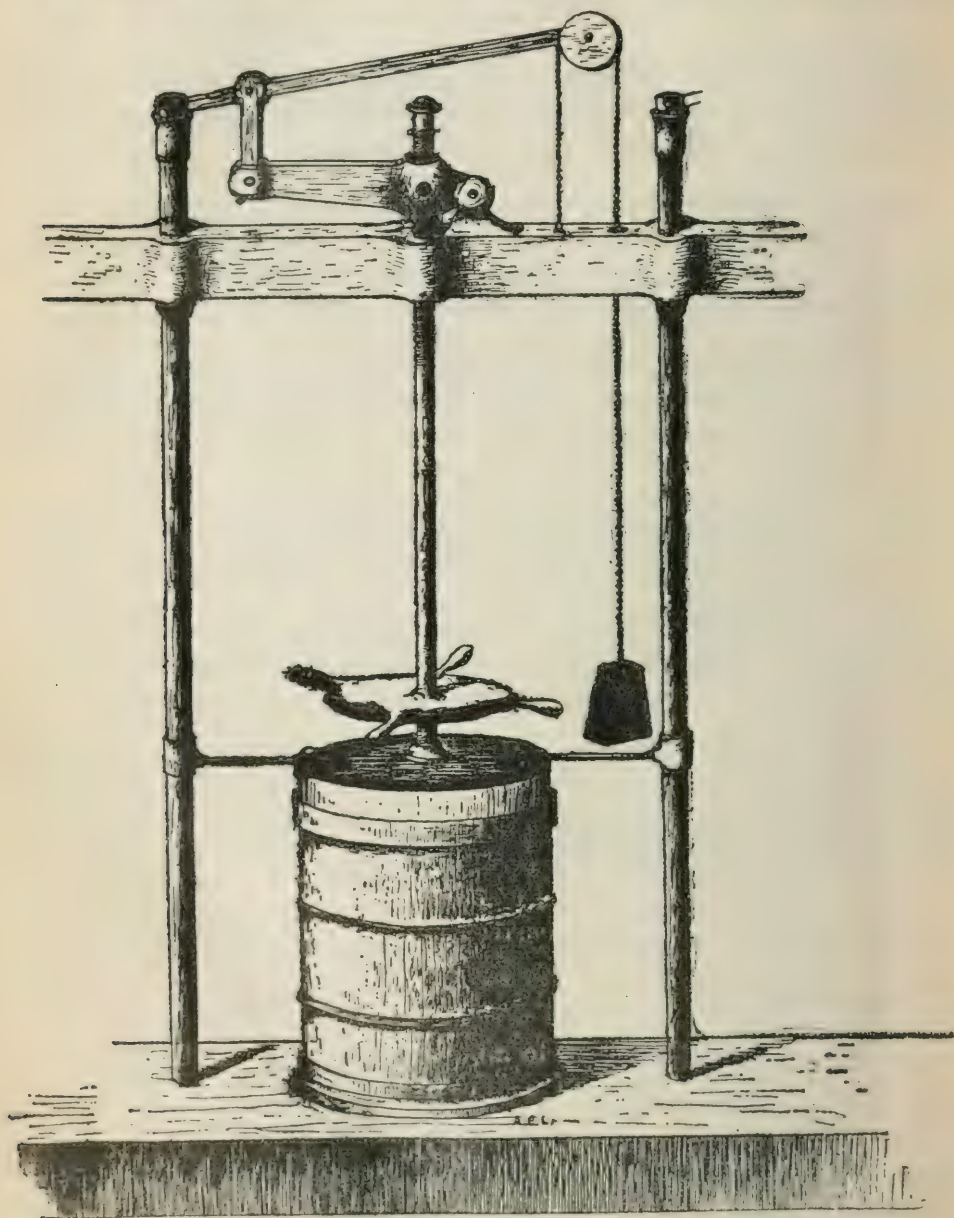
Cheeses are ripened at a temperature approaching 64° or 65° which is the most favorable. It seldom rises to 70° . As regards the hygrometer, Mr. Lloyd in his report gives the following figures as the average of the 7 months in which work was done for six years :

	MORNING	EVENING
Thermometer dry.....	62	65
“ moist.....	59	62

The curing lasts at least two months and even more to ripen some cheeses.

Cheeses are sold only when ripe and according to quality.

5. *English Presses.*—The presses used in England are vertical, with con-



Press with constant pressure.

stant pressure, the pressure being maintained by weights. We have taken the following observation respecting these presses. They are all constructed as follows : A lever jointed and having a pulley at its extremity a second lever below the first and jointed. This second lever bears on the cheese by a rod. The first lever bears on the second by the rod. Through the pulley passes a chain fastened and having a weight at its extremity. By this means the pressure is multiplied many times by the levers and the pressure remains constant. When the weight drops too low, it may be raised by turning the threaded rod by means of the wheel. Of the four presses used at Vale Farm the first could give a pressure of 14 cwt, say, 1568 lbs; the second of 15 cwt, say, 1680 lbs; the third of 17 cwt, say, 1904 and the fourth of 20 cwt, say, 2240 lbs.

The cheeses were 16 inches in diameter; the pressure could therefore be to the square inch of 7.84 lbs. for the first; 8.4 lbs. for the second; 9.52 lbs. for the third and 11 lbs. for the fourth. The first multiplied the weight at the end of the chain 80 times, the second 120 times, the third and fourth 85 times.

On the day when this observation was taken, the first had a weight of 20 lbs., its pressure thus being 1,600 lbs, say 8 lbs. to the square inch; the second with a weight of 7 lbs., gave a pressure of 840 lbs, say 4.20 lbs. to the square inch; the third gave a pressure of 1,360 lbs., say 6.8 lbs. to the square inch, with a weight of 16 lbs., and the last gave a pressure of 1,700 lbs., say $8\frac{1}{2}$ lbs. to the square inch with a weight of 20 lbs.

The height of the vats was 19 inches. The weight of the cheeses obtained with the presses is about 120 lbs, their height 15 inches and their diameter 16 inches.

ACIDIMETER

In work such as that of cheese-making, means of control are absolutely necessary. All cheesemakers know that all milks are not worked equally well; with some the scalding must be done at a higher temperature, more acidity be given in the whey, for instance, and less with

others There must be means of knowing when the milk is sufficiently ripe for renneting ; when the whey is fit to be drawn off ; when the curd is ready for grinding, etc. A good maker should be able to know all these things without making too many mistakes. For this he takes advantage of certain remarks as to the manner in which the milk, whey and curd act in the various stages of manufacture as well as their taste, smell and appearance. The first makers had only the five senses to guide them. It took an apprentice a certain number of years' practice to become an expert maker who could do his work properly, and a good many apprentices could never become good makers, because some senses such as taste and smell were not sufficiently developed with them.

What was the result ? As the skill of the makers varied in almost every factory ; as their observations, their standards were not always the same ; as the quality of the milks and the temperature also varied nearly every day, the uniformity of the lots of cheese in the Province necessarily felt the effects of all this to a great extent and the average price was lowered.

Afterwards, a special means was introduced for approximately ascertaining the acidity of the curd : this was the hot iron test. This test is already an improvement, a surer and more precise method than taste, smell and appearance of the whey and curd, for ascertaining the proper moment for draining off the whey and the moment when the curd is fit for grinding. But this method is still only very approximate. In fact, it is not easy to ascertain the temperature of the iron and the curd does not act in the same manner when the iron is very hot as when it is moderately hot, when the mass of curd is damp and when it is quite dry. On the other hand all curds do not give the same length of thread with the hot iron ; finally, strictly speaking, all makers do not appreciate in the same manner the length of the threads produced on contact with the hot iron. These are many sources of error which still cause marked differences in the quality of the cheeses.

The use of the hot iron, although an improvement in the means of

control, especially in the hands of intelligent makers, is therefore far from being a sufficiently accurate method for a great many makers.

To decide whether the milk is sufficiently ripe for renneting, the rennet test was also introduced. This test gives very accurate results when carefully made. It is a great improvement in our means of control, but cannot be applied to the whey in the subsequent processes of manufacture.

On the whole, until the recent searches of Mr. Lloyd, of which I will now speak, the means of control were still very primitive. To succeed in making cheeses of good quality and quite uniform, a long apprenticeship was certainly necessary and this necessity was one of the causes of the great irregularity in the lots of cheese in this Province. Mr. F. J. Lloyd, to whose great experience we have had recourse during the searches we made this summer, was the first to systematically use the acidimeter in the manufacture of cheese and to recommend its use. This instrument which is intended to ascertain the quantity of acid contained in any liquid, although known for a long time, had not been introduced into cheese factories before his time.

Mr. Lloyd found that, in order to make a good cheese, the acidity of the milk and of the whey at the various periods of manufacture must attain certain proportions from which it would be imprudent to deviate. The experiments he made in this connection lasted eight years and the following is the result of his searches at least as regards the manufacture of Cheddar under the Cannon system which is much prized in England :

The acidity of the milk immediately before renneting should range between 20 and 21 pounds of lactic acid, say an average of $20\frac{1}{2}$ lbs, per 10,000 lbs of milk. So long as a milk has not attained the acidity of 20 it must not be renneted, it is necessary to wait. This acidity is the key to success.

At the moment when the curd is cut, the acidity of the whey decreases by about one third and falls to 14 or 15 lbs per 10,000 lbs. As soon as the whey is withdrawn or while being withdrawn, the curd begins to rise, the acidity must have resumed nearly the same proportion as it had in the milk.

An important determination of acidity that has afterwards to be made is that of the drainings from the curd when it is piled for the first time. If at this moment the acidity of the whey is only once and a half less than the preceding one, that is less than 30 or 32 lbs of lactic acid per 10,000 lbs of milk, the fermentation of the curd will be slow and steps must be taken to hasten it, especially by maintaining a proper temperature in the vat. If, on the contrary, the acidity be more than once and a half that of the preceding one, that is, more than 30 or 32 pounds, this shows that the fermentation will be rapid and steps will have to be taken to moderate it.

The principal acidity to be afterwards determined when whey can be had, is that of the whey before the grinding. This determination is one of the most important. The whey that drains off at this moment should show ninety to one hundred pounds of acid per 10,000 lbs of milk. The curd may then be said to be good and fit for grinding. If no whey can be obtained at this moment, the hot iron test must be resorted to as formerly as well as the smell, taste and appearance of the curd. The last acidity to be ascertained is that of the whey from the press. It should be equal to 5 times that found for the fresh milk immediately after the milking.

During the grinding, salting and vatting, the acidity increases by about 10 to 20 lbs per 10,000 lbs of milk. Thus if before the grinding the milk has an acidity of 90 it is almost certain that it will have an acidity of 100 when it flows from the press.

This last acidity must be taken on a sample of whey collected five minutes after the tightening of the press.

We merely mention these figures in passing to show the importance the acidimeter may assume as a means of control in cheese-making. If its use should become more general, it is certain that after a short apprenticeship all the makers of average intelligence at least would be able to make good cheese more regularly than in the past. Thus manufacture with so accurate a means of control would assuredly become easier and would only call for a little attention and care on the part of the maker.

All cheese-makers should learn to use the acidimeter properly.

It is not our intention to decry the old means of control. They have rendered great services; but there is no doubt that, as regards the majority of makers, they are less convenient and less sure than the acidimeter will be when once its use becomes general. There are a good many makers who possess consummate skill in judging milk, whey and curd by taste, smell and appearance; but such great skill cannot reasonably be expected from all the cheese-makers of the Province. Since there is an easier means and one more conveniently in reach of all for controlling the manufacture, it should be used. The average quality of the cheese of this Province would gain by it, especially as regards uniformity.

Now, how is this test with the acidimeter made? There is a liquid known as phenolphthaleine which does not change color when mixed with another *acid* liquid, such as milk or whey, for instance, but which assumes a very dark red tinge when mixed with an alkaline liquid, that is a liquid containing soda or caustic potash. If, to a certain quantity of milk, we add a few drops of phenolphthaleine, this milk will not assume a red tinge so long as it remains acid, but if the acidity be destroyed by adding a certain quantity of a solution of caustic soda, as soon as the acidity is destroyed and it becomes alkaline, the red tinge will at once appear.

From this it will easily be understood that the more acid the milk is the greater will be the solution of soda to be added to bring out the red tinge. If the same quantity of milk be used at each test and always a solution of soda of the same strength, the quantity of soda to be added each time will necessarily be proportionate to the acidity of the whey. For instance, if the whey has an acidity of 20, I suppose that 40 drops of the solution of soda will have to be added. If its acidity be double, that is 40, double the number of drops, that is 80, will have to be used before the red tinge appears.

Thus we have in this a very easy means of ascertaining the acidity of a liquid. In practice however there is a certain difficulty in seizing

the exact moment when the red tinge appears, for the milk is opaline and this tinge requires to be pretty strong before it can be fully distinguished ; but in practice sufficient accuracy may be attained. A drop more or less represents, with the apparatus now used in the trade, a difference of half a pound of acid per thousand pounds of milk which is very little from the standpoint of manufacture. Nevertheless, to distinguish the exact moment when the color appears, the use of the touch method is recommended. The process in this case is as follows : to the whey is added the quantity of soda required, within a drop or two ; afterwards some drops of phenolphthaleine are put on a white plate, one beside the other. With a glass rod a drop of whey to which soda has been added is taken up and is laid on one of the drops of phenolphthaleine in the plate. If the red tinge does not appear a drop of soda is added to the whey and another drop of the phenolphthaleine is touched. If the red tinge shows, it means that the liquid is saturated ; if not, the process is continued until it makes its appearance and then there is only the quantity of soda solution used to be determined.

For this, burettes are used which are graduated in cubic centimetres and in tenths of cubic centimetres and a soda solution so calculated that each tenth of a cubic centimetre represents one pound of lactic acid per 10,000 lbs of milk or whey. A soda liquor of one half less strength is frequently used, that is, so that each tenth of a cubic centimetre represents half a pound of acid per 10,000 lbs.

As to the shape of the acidimeters, it varies greatly, and it would take too long here to describe the various kinds found in the trade, each of which has its advantages. We have had a drop acidimeter, made in Paris. Every drop represents an acidity of 5 lbs per 10,000 lbs. It resembles a graduated burette and gives good results.

The chief sources of error in the use of the acidimeter are : 1 the reading of the quantity used ; but with a little practice the difficulty presented by such reading is easily overcome and it becomes easy to read regularly.

2. Appreciation of the exact moment when the red tint makes its appearance. This appreciation is the most usual cause of error. Frequently, especially with milk or whey from the press, the red tint does not make its appearance at once, and it is necessary to wait a quarter or half a minute before its appearance. If one be not warned of this and if one hurry, the liquor may be considered not neutralized when it is. Frequently, while pouring the soda liquor into the milk or placing the drop of whey on the phenolphthaleine, the red color appears to afterwards disappear and unless one waits a few moments, the liquor may be considered neutralized when it is not really so. Care must therefore be taken not to hurry too much and the test must be made cautiously.

3. Another source of error lies in the soda liquor itself. The soda liquor, when exposed to the air, loses its strength because the air always contains carbonic acid and by combining with it this acid destroys its strength.

To avoid this drawback, various means may be resorted to ; the soda liquor may be kept in a large bottle with an emery stopper and for daily use a small bottle may be used in which the solution required for a few days only will be kept. By this means, as the large bottle will be opened but seldom, the solution will keep well and as the solution in the small bottle will be frequently renewed, it will not have time to spoil. There is also another means which consists in using a washing bottle containing a solution of soda through which the air must pass before penetrating into the large bottle and in which it divests itself of its carbonic acid. Thus divested it remains without acting on the solution.

It would be desirable, in the general interest of the province, that this very convenient means of control should become general, for it is a well known fact, and we have observed it in England, that the want of uniformity in the lots of cheese from this Province is one of the reasons for the difference of price between our cheese and that of Ontario.

II. COMMERCIAL PART.

We obtained information in the chief ports where our cheese is imported as to the quality of that from the Province of Quebec and as to the needs of the various markets. We also examined cheese from other places

In the first place, as regards price, cheese may be classified as follows, Canadian cheese coming between true Cheddar and the Chester or Cheshire :

1. At the head of all are the genuine Cheddars and the first-class Scotch Cheddars. There is a slight difference between the Scotch cheese and the true Cheddar. This difference lies in the paste, the aroma and the taste. The Scotch Cheddars of the best quality do not fetch the same prices as the true Cheddars which are of the best quality, but as they are of more uniform quality, two lots, one of true Cheddar and one of Scotch Cheddar, will often be sold at the same price.

2. Then come first class Canadian, Chester and Cheshire. Canadian cheese, as paste, resembles Chester rather than Cheddar and, in fact, it is often sold as Chester. The difference in price between these cheeses and first class Cheddar or Scotch is about 10 or 12 shillings per 112 lbs, say 2 to 4 or 5 cents according to the season.

3. Then come the Cheddar, Scotch, Canadian, Chester and other such cheeses of second or third quality whose prices vary greatly. There may be an average difference of 6 cents per pound by retail between the latter and those mentioned in the foregoing paragraph.

England also imports cheese from the United States, Australia and New Zealand. In London, we inspected cheeses from Australia and New Zealand which certainly were of the best quality. These cheeses resemble Canadian cheese. We found some that tasted heated. Cheese from the United States is the same as that from Canada. In Liverpool we found many cheeses from that country which were sour.

The remarkable feature in connection with the cheese from the United States and Australia is that their outward appearance is generally very fine. The cheeses are straight, well turned and very clean. The boxes are of the best quality. The same applies to the Canadian cheese from Ontario. On the contrary the average appearance of the cheese from the Province of Quebec is rather inferior. The boxes are often very badly made and not strong enough. Wood of five thicknesses to the inch should be used. The size of the cheeses is far from being uniform. Some weigh only from 55 to 60 lbs and beside them will be others weighing 80 lbs and over. The want of uniformity in the lots from our province, both as regard outward appearance and quality, is the first thing that strikes one; this is a serious defect.

The London market calls for a cheese not so white, but firm, greasy, unctuous, yielding, and very regular, mild in taste, with an agreeable smell and not too strong.

In Liverpool, for an uncolored cheese a whiter cheese is preferred, softer, very ripe, of well developed flavor and aroma. The Liverpool market also likes colored cheese and in such case the color must be very uniform.

In Bristol, the requirements of the market are between those of London and Liverpool. In Glasgow they approach those of Liverpool.

As a general rule, Liverpool takes all kinds of cheeses and ships them to Bristol, to London and to every port of England.

Here is a summary of the remarks of the importers and retail merchants whom we saw.

As to outward appearance, they told us that much progress had been made of late years in the Province of Quebec, but that there was not enough; that the boxes generally were not strong enough, nor sufficiently well made; that the cheeses were not well turned, nor uniform enough in weight; that there was too much irregularity in the lots. They prefer cheeses weighing from 75 to 80 lbs and rather high than wide. All the importers also ask that the weight be stamped on the boxes and complain that this is not done.

Some among them object to mould, others less; as a general rule cheese without mould is preferred.

For these importers, the outward appearance of the cheese is of great importance, for the customers' attention turns first to that. If the cheeses have a bad appearance, they will not look at them any more.

All colors suit, provided they be uniform and that lots of cheese of the same color may be made up. The colors asked for differ according to the places where the cheese is retailed; but they want to have uniform lots.

Cheese is generally sold without indication of its origin. One importer told us that no marks should be put showing that the cheese comes from the Province of Quebec, because when the customers see this, they will not try it or ask a reduction in the price.

All qualities are sold in Liverpool. But in the retail stores we found a difference of at least 6 cents per pound between the first quality cheeses and those of medium or inferior quality.

The importers also told us that a good deal of cheese from the Province of Quebec did not keep long enough and that were obliged to sell it too quickly. They would prefer cheese that would keep a long time. A clear taste is needed. The sour taste is too often met with as well as a heated taste and bad smells. The cheeses are very often acid, this is too common a defect and a very serious one. Mealy texture is also a serious defect.

Want of uniformity in color is also very common and very bad.

The conclusion to be drawn from all these observations is that we must continue to improve the outward appearance of our cheese and the quality of our boxes; make the cheeses heavier, better cured and above all aim at uniformity. We must by all possible means aim at uniformity and all this outside of the changes that have to be made in our mode of manu-

facture which have been dealt with in the first part of this report. It is true that the various markets accept and even ask for cheese of various kinds and qualities, but what is considered of superior quality in London is also considered first quality in Liverpool and on all the other markets.

Through the kindness of Mr. Hill of Evercreech, Somerset county, one of the leading wholesale dealers in Cheddar cheese in that section, who was good enough to show us over his stores, we had an opportunity of forming a certain idea of the nature of real Cheddar as met with in the trade and of its different qualities. Our sincere thanks are due Mr. Hill for his kindness and courtesy.

MANUFACTURE OF CHEDDAR CHEESE ON THE CANNON SYSTEM.

Adopted and taught at the Dairy School of the Bath and West and Southern Counties Society, England

The Cannon system is that which has been adopted at the dairy school of the Bath and West and Southern Counties, England and it is necessary that it be well understood in all its details.

We publish it here.

The Evening's Milk. - This is brought into the dairy and strained through fine muslin into the cheese-tub. The acidity should then be estimated and recorded. The temperature of the milk when brought in varies from 87° to 91° F., and to prevent the cream rising it is necessary to gently stir the milk at intervals of 15 minutes during the first hour if the temperature of the milk is as high as 90° F., or the dairy is about 70° F., and at longer intervals as the milk cools. When the weather is warm more frequent stirring is needed than when the weather is cool. But if the milk is cold (say 78°-80° F.) when brought into the dairy, it would be advisable to warm it gently, say to 86°, 88° or 90° F., according to the temperature of the dairy. If the dairy is above 58°-60° F., the milk would not require to be heated quite so high. This heating of the milk is to help to promote ripeness or acidity, as the milk, if at a low temperature, would not ripen sufficiently during the night.

In the morning the acidity of the evening's milk should be again estimated.

Then the evening's milk is skimmed, and the cream placed in the warmer with a portion of the evening's milk. This portion will vary with the time of year and the temperature of the evening's milk in the morning. In June, July and August, about one-half will be necessary ; in the spring and autumn, more than half may be necessary.

The Morning's Milk. - Is now strained into the tub containing the remainder of the evening's milk.

Then the quantity of milk in the tub and in the warmer should be noted, and also the temperature of each.

It is essential in cheese-making to know the quantity of milk that is being dealt with. Without possessing this knowledge it is impossible to ascertain whether the cows are maintaining their yield and paying for their keep ; to judge whether the amount of cheese made is what it ought to be ; to accurately estimate the quantity of rennet which should be used ; and, generally, to conduct the many operations of cheese-making by a sure and not hap-hazard method. Therefore the necessity of having both the cheese-tub and warmer accurately gauged cannot be too strongly urged upon all cheese-makers.

While it is customary to find cheese-tubs with a gauge, it is seldom that the warmer has one. Yet to facilitate and ensure accuracy in cheese-making, it is advisable to have accurate gauges for both cheese-tub and warmer.

The gauges should not be fixed to the tub, but made to hang from the rim thereof, so that they can be easily removed and cleaned.

Those at present supplied with cheese-tubs are not graduated finely enough. They are only marked to show 5 gallon differences, whereas it would be easy to sub-divide each of these divisions into 5, so as to gauge the exact number of gallons present.

These marks might reach only half-way across the gauge. Greater care should also be taken to place the cheese-tub exactly horizontal ;

frequently there is a difference of two or more gallons in the reading of the gauge, according to its position on the tub. In such case it is necessary to take the readings at two opposite points, and the mean of the two readings will show the quantity of milk present.

Heating Evening's Milk.—The first operation is to bring the whole of the milk to the correct temperature for renneting. This temperature is 84° F

In order to estimate the temperature to which the portion of evening's milk in the warmer should be heated, it is necessary to first note the quantity of milk in the tub and its temperature. If the milk in the tub be exactly 84° F., then evidently it is only necessary to heat the portion of evening's milk in the warmer to 84° also. But if the milk be above 84° , then, in order to cool it down, the milk in the warmer must not be heated to 84° , and, on the other hand, it must be heated above 84° when the milk in the tub is below this temperature.

The milk, however, must not be heated above 90° F., and hence it is that the quantity of evening's milk heated must depend upon the time of year, as this affects both the quantity and temperature of the milk in the tub. It is always advisable to have plenty of evening's milk in the warmer.

In order to show how to calculate the temperature to which the milk in the warmer should be raised, let us assume there are 60 gallons of milk in the tub at 83° , and 20 gallons in the warmer.

Each gallon in the tub has to be raised one degree, which represents 60 degrees of heat, therefore the 20 gallons must be raised 3° above the temperature required so as to give these 60 degrees of heat to the milk in the tub. The temperature required is 84° , to which add the 3° required, and we obtain 87° as the temperature to which the evening's milk must be heated.

On the other hand, if the 60 gallons were at 86° F., they would have to be lowered 2° each, or 120 degrees of heat, which is the same as lower-

ing 20 gallons 6 degrees each. Hence, the 20 gallons would be required at a temperature 6° below 84°, or at 78° F.

The rule may be stated thus. Multiply the number of gallons of milk in the tub by the number of degrees which they have to be raised or lowered, and divide the number so obtained by the gallons of milk in the warmer. The result shows the number of degrees above or below 84, to which the milk in the warmer must be brought.

Example.—There are 17 gallons of milk in the warmer and 51 in the tub at 82° F. The milk in the tub has therefore to be raised 2° F.

$$\begin{array}{rcl} \text{Multiply} & 51 \times 2 = & 102 \\ \text{Divide by} & 17 \text{) } 102 \text{ (} & 6 \\ & & 102 \end{array}$$

Add 6 to 84, and we obtain 90° as the temperature to which the 17 gallons have to be raised.

Whey added.—A certain quantity of whey, which has been reserved from the previous day's make, is now heated in the warmer to 84°, and added to the milk to ensure sufficient acidity. The quantity depends mainly upon the temperature to which the evening's milk has fallen during the night, as also upon the acidity in the morning. If it remains above 70° F. in the morning, about 1 gallon of sour whey should be used for every 50 gallons of milk; if under 70° but above 65°, from 2 to 3 gallons would be desirable. The quantity must, however, depend upon the judgment of the maker. When the acidimeter is used, if the rise in acidity has been only .01, a full amount of whey may be added, but if it has risen .03, only a small quantity or even none at all would be necessary, especially in very warm weather.

In some instances, where the dairy is small and the milk remains at a high temperature all night, it is not necessary to add any whey. Should there have been any taint in the previous day's milk, it would be unwise to add any whey from that day's make. It will then be necessary to keep the heat in the evening's milk during the night, by covering the tub over with a cloth, not forgetting to stir so as to prevent the cream rising.

Rennetting.—The next operation is to add the necessary quantity of rennet. After adding the rennet, the milk is thoroughly well stirred for 10 minutes. When the milk is very ripe—which will have been noticed if the cream tasted a little sour before being put into the warmer, as also by the quantity of acid present—a shorter period will be sufficient. The tub is then covered over, three laths being first laid across the top of it, and upon them a “wrapper” of sackcloth. This will maintain the heat in the milk and keep out dust.

Measuring Rennet.—To use the proper quantity of rennet is one of the most important points in cheese-making. The quantity will depend upon the time of year, the composition of the milk, and the strength of the rennet. The first two can only be estimated from experience and by careful observations from day to day. The latter can be easily determined by the aid of a few instruments. It is impossible to lay too much stress upon the importance of using the correct quantity of rennet, and that this shall be pure and clean. If rennet be added in excess, a hard curd will be obtained; and when insufficient is used, a soft curd ensues, causing white whey and a considerable loss of fat, unless the very greatest care is subsequently exercised.

A good rennet extract will cause 9,000 times its own volume of milk to set in a firm curd in 45 minutes. Seeing then the remarkable strength of the rennet extract, it is most necessary to have a means of very accurately measuring out the quantity necessary.

Some cheese-makers use merely an old tea-cup, and wonder why they do not get the same results with their cheese day after day. Some use the ordinary medicine glass divided into tea-spoonfuls, but this is not nearly accurate enough. At my suggestion, Messrs. Townson and Mercer, of 79, Bishopsgate Street, London, have made a two-ounce graduated glass cylinder-measure, having 200 divisions, each of which represents 100th part of an ounce. With this measure, it is easy to accurately measure out the necessary quantity of rennet, while to calculate what this quantity is will be very simple. Multiply the number of gallons of milk by 16, and divide by 9, the result will show the number of divisions of rennet necessary.

For example: 72 gallons of milk are in the tub, multiply this by 16,

the result is 1152, which divided by 9 gives 128; and therefore 128 divisions of rennet will be required, in other words, 1.28 ounces.

This will be correct when the proportion of rennet to milk is 1 to 9,000; if the proportion is to be 1 to 8,800, then divide by 8.8, or if 1 to 9,200, then divide by 9.2

Testing Rennet.—To test the strength of the rennet, proceed as follows: Take 6 oz. of milk, warm to 84° F., add 10 divisions accurately of rennet; stir well for a second or two, and note carefully how many seconds elapse after adding the rennet before the milk sets firmly; the time will vary according to the rennet. To facilitate noting the exact time when the milk sets, a little bit of cork may be floated on the 6 ozs. of milk; it will suddenly stop moving the instant the milk sets. The number of seconds which it takes to set the milk should be noted on the bottle or in a notebook.

In this way, it is after a little experience easily possible to tell whether any new rennet bought is adulterated or of the same strength as the old, for if not, it will take longer for the 10 divisions of rennet to curdle the 6 ozs. of milk.

Cutting the Curd.—The curd should be ready to cut forty-five minutes after the rennet was added, and when it has attained a certain degree of firmness which is judged by cheese-makers in various ways, some by pressure with the fingers on the top of the curd, others by the way in which the curd breaks over the finger, or, better still, over a clean glass thermometer. The curd should break with a clean fracture, and not fall away in little pieces on either side. When this consistency is obtained, but on no account before, the curd is "cut". This is usually done with a breaker, great care being necessary to cut it evenly, thoroughly, and yet gently, so as to prevent any loss of fat. The American curd knives may be used instead of the breaker, and are infinitely better. Subsequently the curd is allowed to settle until the whey has risen. The time which elapses before the whey rises and the curd is fit to break will vary nearly every day, and the whey is allowed to rise more thoroughly in autumn than in summer. When the whey rises quickly—one hour from the time of renneting—it indicates that a quite sufficient quantity of acid was present in the milk; but if the whey rises more rapidly, there was an excess of acidity; while, if it takes

longer than one hour from time of renneting, then there was a lack of acidity, in which case the stirring during scald will have to be continued for a longer period than would otherwise be necessary.

Breaking — When the whey has properly risen, the “breaking” of the curd commences. The curd must be broken gently but evenly for half an hour, at the end of which time it should be in a uniform state of fine division, and in pieces about the size of peas.

After breaking, the curd is allowed to settle for 5 minutes. Sufficient whey is then dipped out and put aside for the morrow’s cheese.

First Scald.—A quantity of whey is now placed in the warmer, and heated to such a temperature that when it is again mixed with the portion in the tub, the latter is raised to a temperature of 88° F. The heated whey should be added gradually, the contents of the tub being slowly stirred the whole time. As a rule it is found that if one-fourth the contents of the tub are heated to 110° F. this will be sufficient. This is called the first scald. Should the acidity be developing more rapidly than usual it is desirable to raise the first scald to 90° F. instead of 88° F. The temperature to which this portion of whey must be heated may be estimated by means of a similar calculation to that adopted with the evening’s milk.

Thus, if there are 60 gallons in tub and 15 in warmer, the temperature in tub is, say, 83°, hence 60 gallons have to be raised 5 degrees each, or 300 degrees of heat; the 15 gallons in the warmer must therefore be heated 20 degrees above the required 83°, or to 103° F.

While the whey is being warmed, the hand is passed round the sides of the tub from top to bottom, so as to separate any curd which may cling to the sides. The curd must be kept stirred while the whey is being heated. The hot whey having been added, the curd is well, yet slowly, stirred for 15 minutes and then allowed to pitch or settle for 5 minutes. When the acidity is rising rapidly it is only desirable to stir for from 5 to 10 minutes.

Second Scald.—A fresh portion of whey is placed in the warmer, usually about one-seventh the contents of the tub, and heated to 130°, and sufficient is gradually added to the tub to raise the contents to a temperature of 92° F. This is the second scald. Later in the year the temperature of the

second scald is raised to 94° F. If the acidity is going very rapidly it is desirable to make the second scald higher, 96°, 98°, or even 100° F., according to the rate at which the acidity is developing.

The whey for the second scald must never be heated above 130° F. so more must be taken when a higher scald is required.

The curd is kept continually stirred in this scald until it has acquired a certain degree of firmness. This firmness is estimated by the sense of touch of the maker, some of the curd being pressed in the hand. Others use the hot-iron test. The curd should attain a condition which is technically termed "shotty." Ordinarily, this condition is obtained after about 30 minutes' stirring, though sometimes it may take much longer. In fact, it cannot always be obtained, and the curd is then known as "sweet". When the curd is sufficiently hard, the contents of the tub are very rapidly stirred round into the condition of a whirlpool, so as to gather the curd into the centre, and the curd is then allowed to settle. The acidity of the whey should now be tested. If the acidity be correct, the curd should remain for 15 minutes, but if "sweet", and not firm, it must remain for a longer period; in fact, it should remain until the acidity is nearly the same as that of the mixed milk renneting. Subsequently the whey is drawn off through a strainer into the whey leads. The curd is then "piled".

Piling Curd.—This operation consists in turning up the outer rim of curd, which lies on the bottom, and immediately around the side of the tub, and throwing it back on to the centre pile of the curd, more especially around the edge, so as to build up in the middle of the tub a solid circular block of curd, the edge of which is about six inches from the side of the tub. The crumbs of curd in the strainer are placed on the top of the pile, and well pressed in with the hands. The curd is next cut with a knife into blocks about 6 to 8 inches square—this being about the height of the piled curd. The centre blocks having been turned over, the outer ones are placed upon them, the heap cut round with a knife, so as to remove all projecting edges, and the portions cut off placed on the top. All the crumbs are next carefully swilled down with whey from the sides of the tub, and from around the pile, collected in the strainer, and then placed on the top of the pile. The piled curd is covered with thin cheese-cloths and wrappers, and the curd is allowed to drain, as a rule, until the whey only comes in drops from the tub. This will take from 5 to 30 minutes; even longer if

the curd is "sweet." The acidity of the liquid from the piled curd should be estimated. It should be about half as much again as that of the mixed milk. When the curd is too firm from an excess of acidity, it is sufficient to cover it when draining with thin cloths only, and when the acidity is very high, the curd need not be piled, but simply turned, and at once removed to the cooler

Ripening of Curd.—The curd is next cut into six or eight blocks, one-half taken to the "rack" in the "cooler," broken with the hands into small pieces, and tied up tightly in a cloth. The remaining half is treated in a similar manner, and the two bundles are then placed one on top of the other, and subjected to pressure by being covered with a tin pan reversed, on which are placed a cloth, a thick board, and a heavy weight. The weight varies from 56 lbs. to 84 lbs., according to the quantity of curd. The whole is wrapped round with cloths to keep the heat in the curd, and so promote its ripening. Should, however, the curd contain an excess of acid, it is not advisable to wrap it up

The curd is left thus for half-an-hour, during which time a certain amount of liquid drains away from it. When the curd contains an excess of acid, from 5 to 15 minutes is sufficient time to elapse both at this stage and between the subsequent turnings throughout the ripening process.

First Cutting.—The curd is taken out of the cloth and cut with a knife vertically, say from N. to S. and E. to W., at distances of one to two inches, so as to produce oblong pieces of curd one to two inches square, and about 4 inches in length; when soft and acid it is cut finer than when sweet. These pieces are well mixed together, again tied up in the cloths, the bundles being reversed so that the upper one is placed underneath. The bundles having been treated as above described, are subjected to the same pressure for a further period of half-an-hour. Again some liquid drains away.

Second Cutting.—The curd is taken out of the cloth, cut as before, then pressed down so as to lie at an angle of 45° with the cooler, and again cut across, so that each oblong piece becomes divided into three or more cubes of about one inch each in size. When the curd is very sweet it is cut into larger, about two inch, cubes. The cubes are packed up as before, and subjected to pressure for half-an-hour. The acidity of the liquid which drains away should be estimated, and compared with that of the drainings

from the piled curd, as it will afford evidence of whether the acidity is developing rapidly or slowly.

Turning the Curd.—The curd is then opened up, broken into lumps by being pressed against the rack, again tied up and subjected to the same pressure as before for half-an-hour.

This operation is repeated sometimes twice or thrice, at regular intervals of half-an-hour, except when the curd is slow to ripen, as frequently happens in the spring and autumn. It may then be necessary to leave one hour between each turning, or even longer after the second or third turning.

The turning of the curd proceeds until it has attained the requisite degree of ripeness. The curd should then be dry and solid when cut, leathery and flaky when torn asunder, of good taste and smell, and sufficiently acid. The acidity must be estimated in the whey draining from the curd, and not until this shows sufficient acidity should the curd be ground.

No part of the manufacture of Cheddar cheese requires more judgment, experience and natural aptitude than to determine when the curd has attained that condition in which it may be considered fit to grind.

Grinding and Salting.—The curd is then passed through the curd mill, spread on the cooler and salted. The quantity of salt used is $2\frac{1}{2}$ lbs. to 112 lbs. of curd. The salt is thoroughly mixed with the curd, which is then placed in the vat, each portion as it is put in being pressed down carefully so as to pack the vat evenly.

Pressing.—The vat is then put under the first press, pressure being applied very slowly and increased gradually until full pressure is applied, this should take from 30 minutes to one hour. Pressure is then taken off, the cloths pulled up, then a tin follower put on under the wooden one and full pressure applied. Here it is left over-night.

The acidity of the liquid from press should be estimated and should be five times that of the evening's milk. Thus should the evening's milk have had an acidity of .18, the liquid from press should have an acidity of .90.

It is above all things necessary to obtain in the curd before it is vatted a sufficient amount of acidity ; without this it is not possible to make either a good cheese or cheese of uniform quality, while by securing it many of the taints which are a constant source of trouble to Cheddar cheese-makers are destroyed.

Next morning the cheese is removed from the first press, and dry cloths having been put on it, it is placed in the second press, which should exert slightly greater pressure.

This operation is repeated the third day, still greater pressure being now placed upon the cheese. On the morning of the third day the cheese is greased, a cloth pinned tightly round it, and a cap placed on each end. The cheese is then returned to the press, and the next morning is bound, weighed, labelled, and taken to the cheese room.

Where many cheeses are made, it is advisable to have two cheese-rooms for ripening the cheese. The temperature of the one to which the cheeses are first taken should be maintained as far as possible between 63° and 68° F. The second room may be cooler, with a temperature of 58° to 63° F.

For three or four weeks after the cheeses are made, they must be turned every day ; and subsequently they should be turned every few days until sold.

Such is a description of the method of making Cheddar cheese adopted at the School of the Bath and West and Southern Counties Society, England.

But, in addition to a close attention to the details herein mentioned, it is essential to the production of a good cheese that the following conditions be observed.

Cleanliness.—First and foremost, it is necessary that the greatest care be taken in milking, to prevent any contamination getting into the milk. And should the milk in the evening be brought into the dairy before the day's cheese has been vatted, the cheese-maker must wash his hands before touching any of the apparatus used for the evening's milk.

The apparatus and all utensils employed must be kept scrupulously

clean by thorough washing and scalding, not the least trace of curd being left anywhere.

Badly made, as also wornout, utensils, cannot possibly be thoroughly cleansed, and must be rejected. The dairy itself must be kept clean and well ventilated, and nothing should be kept in it except what is absolutely required for the cheese-making.

The floor must be well laid, and all cracks, open joints, &c., filled in with cement, and the drain should be an open one. Should any milk or whey be spilt on the floor, it must immediately be wiped up with a clean flannel or mop.

In addition to the minute attention to details which has been insisted on, it is essential that an ever-watchful intelligence should be possessed, and constant observation exercised, by every cheesemaker who aims at the rare result of producing, throughout a whole season, cheese of the best quality, at once rich, mild, and uniform in character.

Nothing short of the most exact attention to every detail herein set forth, will ever secure the manufacture of cheese of this high quality.

The most important acidity determinations in the Cannon system.—Those who, in carrying out this system, use the acidimeter are anxious to know which are the most important acidity determinations. It will be well to answer this question, and, at the same time, to draw attention to the most striking points in the results which may be obtained, even at the risk of repeating what has already been stated in the preceding pages.

The acidity of the evening's milk is the first determination necessary, and this should be made when it is brought into the dairy, and again in the morning. If the evening's milk has been kept sufficiently warm, the acidity will have slightly risen during the night from say .19 per cent to .20 per cent. If the dairy has been close and its temperature high, the acidity may have risen to .21 or .22 per cent, as frequently happens during the months of August and September.

It is not absolutely necessary to take the acidity of the morning's milk, but that of the mixed milk must be taken most carefully before renneting, for it will be the key to the day's proceedings. It is always

desirable to begin cheese-making with milk sufficiently ripe, and the best acidity to aim at obtaining is .20 per cent. The next determination of acidity necessary is in the whey when the curd is thought to be sufficiently firm to stop stirring. The whey if fit to be drawn off should then have an acidity of .01 or .02 below the mixed milk when renneted. If it has not, it will be necessary to allow the curd to settle, and to wait until the acidity is developed. It takes about 15 minutes to rise .01 per cent in acidity. The acidity will rise as the whey comes from the curd, and will reach in the end .01 to .02 above what it was when stirring ceased.

It is well to adopt the standard of .01 per cent, below that of the mixed, as the best acidity for the whey to acquire before it is drawn off: but, under exceptional conditions, it may be necessary to draw off the whey before it has acquired the standard acidity.

The next determination of acidity desirable is that of the drainings from the piled curd in the tub, for it will give some idea of the rapidity with which the cheese should subsequently be handled. If it is found that the acidity from the piled curd is less than half as much again as that of the whey, then, in all probability, the subsequent development of acidity will be slow, and the necessary precautions should be taken to hasten it as far as possible, more especially by keeping the curd warm. But if the acidity of the liquid from the piled curd is more than half as much again as the whey, then acidity is developing rapidly, and care must be taken to hasten on subsequent operations accordingly.

The subsequent determinations of acidity will be made to determine when the curd is fit to be ground. There is no stage in the manufacture of a cheese more difficult to estimate than this. If the acidity apparatus were used for this determination only it would well repay its cost and the trouble of learning to use it properly. The acidity of the liquid which comes from the press is the final determination made.

There will, as a rule, be a close relation between these two estimations varying mainly according to the weather, or rather the temperature of the curd, which again is due mainly to the temperature of the dairy.

The rate at which the cheese is ripened will depend upon the acidity

of the liquid from press more than upon any other factor, assuming of course that the cheeses are kept at a uniform ripening temperature.

If the acidity be low, the ripening process will be slow ; if the acidity be high, the ripening process will be rapid.

The composition of the milk from which the cheese is made plays an important part in determining the quantity of acid which is permissible in the liquid from the press ; in other words, in the curd when this is taken to the cheese-room. The richer the milk, the more acid there may be present in the curd.

We have seen that the richer the milk the higher the acidity of that milk ; hence, after careful consideration of all the facts obtained in these investigations, I have come to the conclusion that the acidity in the liquid from press should be five times that of the original acidity of the milk, that is, of the evening's milk, not of the mixed milk prior to renneting.

Such are the chief determinations of acidity required.

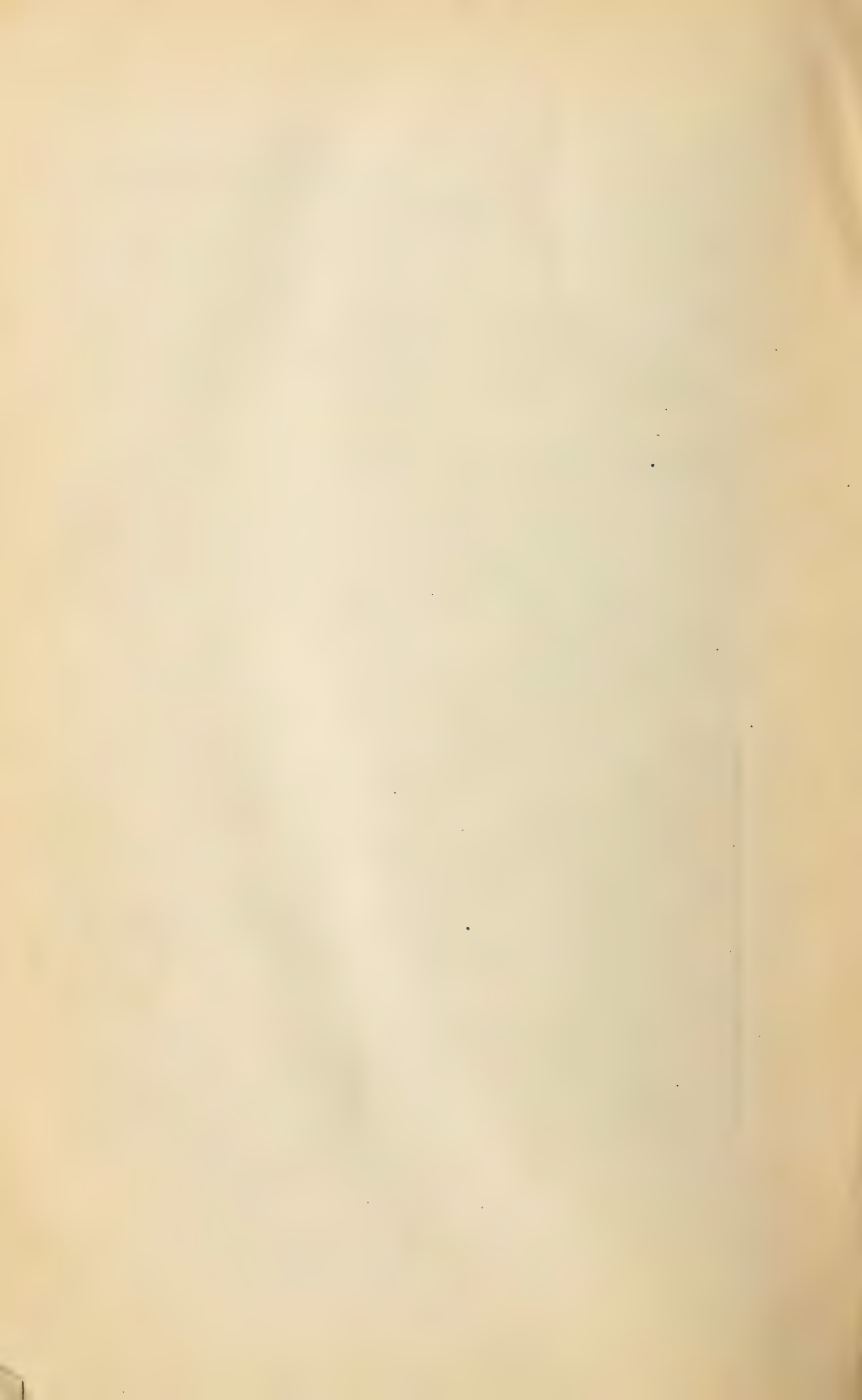
At no time will the cheese-maker find a greater benefit accrue from the use of the acidity apparatus than when dealing with tainted milk.

Of the more frequently present taints, the foecal taint is characterized by delaying acidity, and the vinegar taint by causing a rapid development of acidity. Many of the cheeses made at the present day are inferior owing to the presence of the taints. But if when the former taint is present, a sufficient amount of acidity is developed in the curd before it is put in the press, the taint will pass off during the subsequent ripening. And when the vinegar taint is present the development of acidity can be checked, and so prevent the cheese from acquiring an acid or stinging flavour. Hence by the careful use of the acidimeter both these troubles can be largely controlled.

G. HENRY, C. E.
E. BOURBEAU.

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